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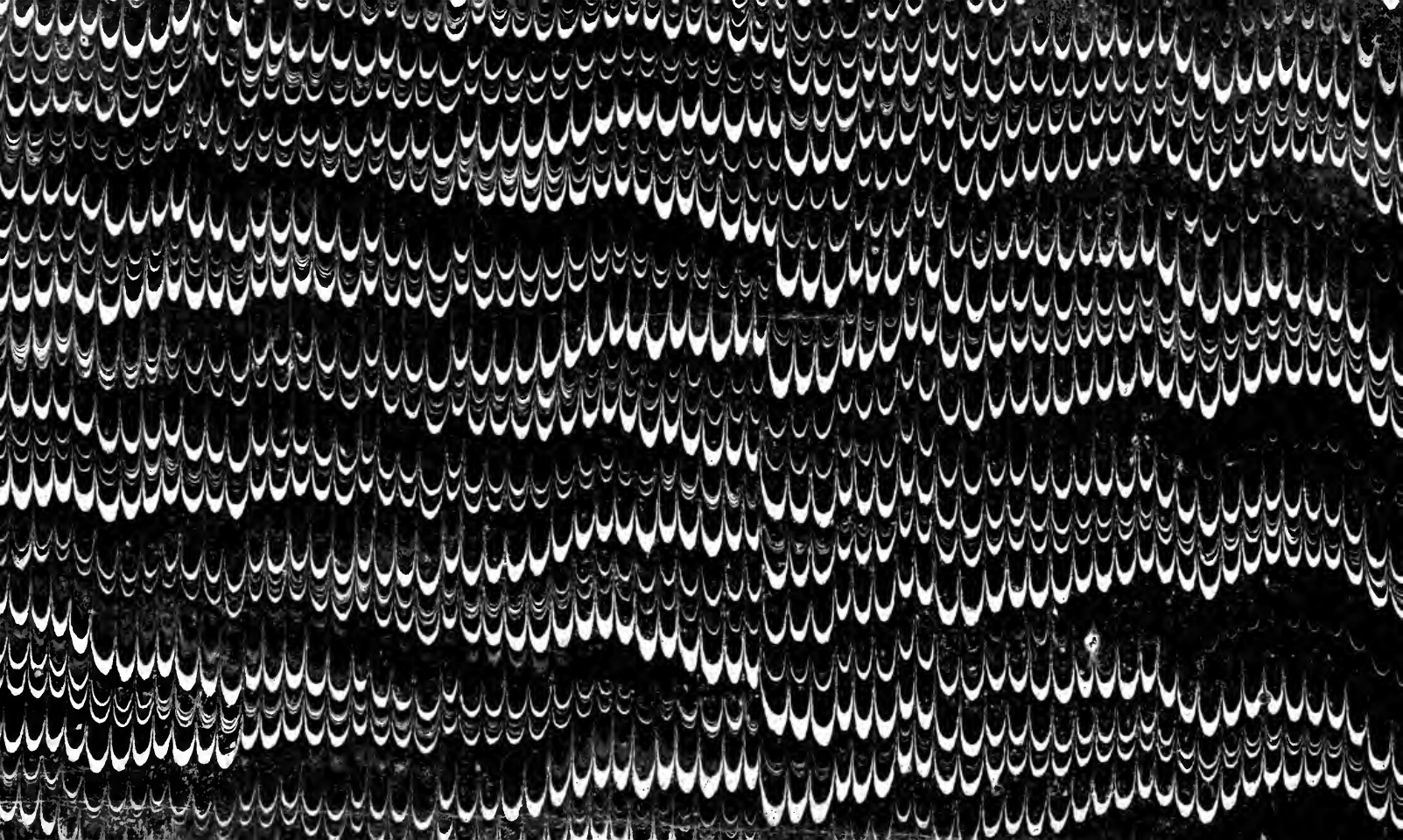

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TRANSACTIONS

OF

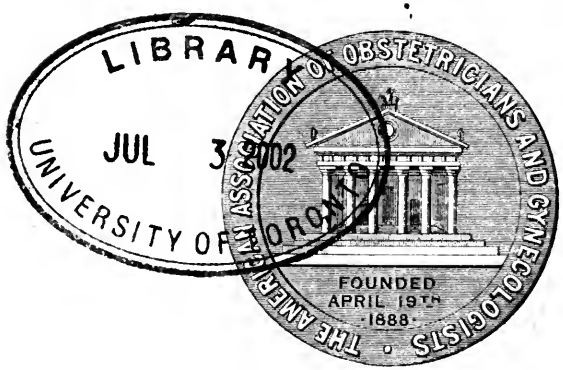
AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

VOL. I.

FOR THE YEAR 1888.



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1888.

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AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

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NOTE.

THE Association does not hold itself responsible for the views enunciated in the papers and discussions published in this volume.

WILLIAM WARREN POTTER, *Secretary*,
284 FRANKLIN STREET, BUFFALO.

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MINUTES OF THE

PROCEEDINGS AT THE INITIAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS,

HELD AT

THE "NIAGARA,"

Buffalo, N. Y.

APRIL 19, 1888.

INITIAL MEETING.

AN invitation to a number of gentlemen interested in *Abdominal Surgery, Obstetrics, and Gynecology* residing in various parts of the United States, to meet and consider the propriety of organizing under a common name for the purpose of cultivating and promoting knowledge in these several branches of medicine, brought them together at the "Niagara," Buffalo, N. Y., April 19, 1888.

The meeting was called to order at 10.30 A.M., by DR. A. VANDER VEER, of Albany, on whose motion DR. W. W. POTTER, of Buffalo, was elected Temporary Secretary.

The Secretary then called the roll of those who had responded favorably to the invitation, as follows:

*ALLEN, HENRY B.	BALDWINSVILLE.
BAKER, WASHINGTON H.	PHILADELPHIA.
*BANTA, ROLLIN L.	BUFFALO.
BECKWITH, F. E.	NEW HAVEN.
*BOYD, JAMES P.	ALBANY.
*CARSTENS, J. H.	DETROIT.
CARSON, N. B.	ST. LOUIS.
CUSHING, C.	SAN FRANCISCO.
DUNHAM, J. M.	COLUMBUS.
*HILL, HAMPTON E.	SACO, ME.
ILL, EDWARD J.	NEWARK.
JARVIS, GEORGE C.	HARTFORD.
*LOTHROP, THOMAS,	BUFFALO.
MAXWELL, THOMAS J.	KEOKUK.
*MILLER, A. B.	SYRACUSE.
*MONTGOMERY, E. E.	PHILADELPHIA.
MYERS, W. H.	FORT WAYNE.
*OPIE, THOMAS	BALTIMORE.
PRICE, JOSEPH	PHILADELPHIA.
*POTTER, WILLIAM WARREN	BUFFALO.
*STANTON, BYRON	CINCINNATI.
SHEPHERD, GEORGE R.	HARTFORD.

STORRS, MELANCTHON	HARTFORD.
*TAYLOR, WILLIAM H.	CINCINNATI.
*TOWNSEND, FRANKLIN	ALBANY.
*VANDER VEER, ALBERT	ALBANY.
WATHEN, WILLIAM H.	LOUISVILLE.
WEBBER, N. W.	DETROIT.
*WERDER, X. O.	PITTSBURG.

The names of those present at the meeting are preceded by an asterisk (*).

Telegrams or letters of regret were received from DRS. ILL, of Newark; MAXWELL, of Keokuk; MYERS, of Fort Wayne, and others, who pledged their coöperation and support of the objects of the meeting.

On motion of the Secretary, DR. THOMAS OPIE, of Baltimore, was elected Temporary Chairman.

On taking the Chair Dr. Opie thanked the meeting for the honor conferred, and, in a few well-chosen words, expressed entire sympathy with its purposes, pledging his support to the organization if perfected, and introduced DR. THOMAS LOTHROP, of Buffalo, who made the following remarks:

GENTLEMEN: On this auspicious occasion, which calls together from widely distant sections of our common country, representative men with a view to advance the interests of a great profession, I am bidden by my *confrères* of the Buffalo Obstetrical Society, and by members of the profession in our city, to tender you a cordial welcome.

It is a notable feature of our day that, in the various departments of human knowledge, associated effort in special lines of thought and study is adopted to assist the labors of scientific men. The organization of societies to promote the interests of other departments of medical science, by enlisting the energy and ability of men of like professional tastes and habits, has contributed in a great measure to the activity observed in professional circles on medical and surgical subjects. In the department of obstetrics and its allied science, gynecology, there is a wide field of labor—one of most absorbing interest. To these we may fittingly add abdominal surgery, that is now rapidly assuming such strong claims to be considered a special branch of surgical science and art. If wisely directed, your efforts in organizing an association for the advancement of these special departments of medical science will bring forth results to bless humanity and the noble profession to which we belong. We rejoice at these evidences of interest and activity which have summoned you from your busy work, and for the good of the profession and humanity, to take sweet counsel together for the perfecting of your scientific labors.

Let not, however, your earnestness in organization, nor your zeal in this

special department of medicine, hinder you from taking even a cursory view of our beautiful city, which, with its parks and boulevards, its educational and eleemosynary institutions, occupies a commanding position in the Empire State. While yet young in years, compared with the centres of population of the East, Buffalo maintains a proud position by its increase in wealth and population, and, in the advantages it offers for commerce and enterprise, is inferior to none of her sister cities. The medical profession, for which I speak, has worthily maintained her reputation, and promoted, by honorable labor, her interests.

I beg to express the wish that your deliberations here will be fruitful of good in the special work which calls you from your distant homes; that your tarry in our city may be among the pleasant incidents in your busy and useful lives; that your stay may be prolonged to enjoy the hospitality it is our privilege to tender you, and that we may improve the opportunity to become personally acquainted with our honored guests and also to be better known of them.

Dr. Vander Veer, having been called upon to state the general plan of the proposed organization, said that he felt it his first duty to thank Dr. Lothrop for his timely and felicitous words of welcome and encouragement; that he regarded the evidences on all sides as encouraging, not alone by the presence of so many distinguished men to take counsel together, but by the cheerful letters from those who were, by force of circumstances, absent and whose wise suggestions we should thereby be deprived of.

This was the age of organization whose spirit prevaded all industries and professions; in church, in politics, in manufactures, in all business enterprises its benefits were everywhere witnessed, and even the medical profession could not escape its influences if it would. If we recalled what has been seen in our own time and within our own knowledge, it would present a picture of the most splendid growth of organized scientific medical bodies that the world had ever seen, and no one would attempt to deny their usefulness, or their value in shaping and directing medical thought to the higher planes of utility. He next referred to the Congress of American Physicians and Surgeons, which was announced to meet in Washington, September 18, 19, and 20, 1888, and which aimed to embrace all the organized special societies, though, for some unexplained reason, as yet the departments of obstetrics and gynecology were unrepresented in that body. In corresponding with a number of prominent physicians throughout the country, it had been suggested by them that if a Society were properly organized embracing these branches, it would probably be admitted to the Congress. It seemed to the speaker that

there could be no reasonable doubt as to the success of such an Association, if it were only well organized and did efficient work. The presence to-day of so many earnest workers in this field already presaged success.

Dr. Montgomery coincided with all that Dr. Vander Veer had said, and thought it desirable to seek admission to the Congress. The names on the roll indicated success to his mind, and he favored the perfection of the organization upon the lines indicated in the call, and upon the basis of permanency.

Dr. Lothrop thought the movement was in a wise direction; that there was plenty of work to be done in this field of medicine; that those who had taken active part in the preliminaries of this meeting had performed their parts well; and he was glad Buffalo had been selected in which to organize an association that already gave promise of becoming an influential body in the guild of medicine.

Dr. Taylor said the fact that we were here indicated to him our feelings on the subject; that he had no doubt as to the propriety of forming the association proposed; and would lend his best energies to its successful accomplishment.

After further remarks of similar import by Drs. Potter, Stanton, Carstens, and others, it was unanimously resolved to be the sense of the meeting that it proceed to complete the organization in the usual way.

The chair having been empowered by vote to designate a committee of three to draw up a Constitution and By-laws, appointed as such committee:

Drs. A. Vander Veer, of Albany, E. E. Montgomery, of Philadelphia, and Byron Stanton, of Cincinnati.

The committee retired at 11.10 A.M., and while it was out the time was occupied in an informal conference of the gentlemen present.

At 11.30 the committee, through its chairman, Dr. Vander Veer, reported a Constitution and By-laws. These were then discussed section by section, and, after a few amendments, were adopted.

An invitation was received from the *Buffalo Obstetrical Society* for the visitors to join it at luncheon; accepted, and a recess ordered at 12.30., until 3 o'clock.

Meeting called to order at 3.15 P.M. when an election of officers was held in accordance with the constitution, just adopted, with the following result:

President, William H. Taylor, of Cincinnati. *Vice-Presidents:* E. E.Montgomery, of Philadelphia; and J. H. Carstens, of Detroit.

Secretary, William Warren Potter, of Buffalo. *Treasurer*, X. O. Werder, of Pittsburg. *Executive Council:* Thomas Opie, of Baltimore; C. Cushing, of San Francisco; Melancthon Storrs, of Hartford; and Byron Stanton, of Cincinnati. *Delegate to the Ex.-Com. of the Congress of American Physicians and Surgeons*, James P. Boyd, of Albany; *Alternate*, Hampton E. Hill, of Saco, Me.

On motion of DR. VANDER VEER, the delegate-elect to the Executive Committee of the American Physicians and Surgeons was instructed to make application for the admission of the Association to the Congress, which is to convene in Washington, September 18, 19, and 20, 1888.

DR. VANDER VEER moved that all who had responded favorably to the invitation to attend the initial meeting to-day be placed on the roll as foundation members; and, further, that all who make application for fellowship before the annual meeting, if favorably reported upon by the Executive Council, be considered as foundation members; carried.

The temporary chairman, Dr. Opie, appointed DRS. VANDER VEER and LOTHROP a committee to escort the president-elect to the chair.

DR. TAYLOR, on taking the chair, remarked that he had much rather the honor had fallen to another; that he felt his own unworthiness, not to say inability, to undertake the functions of the office which he was minded should have been conferred upon one of the chief movers in the organization of the Association. Nevertheless, as he had been chosen by the unanimous voice of the Fellows, he could not turn his back upon the honor, and thus proclaim his indifference to the objects of the Association and the splendid body of men that composed it; he would therefore conclude by reiterating his remarks of the morning—that he would promise his best efforts toward securing those results that legitimately belonged to earnest, well-organized, and determined effort in the direction of the advancement of Medical Science. Invoking the coöperation and support of every Fellow in the direction named, and thanking them for the honor conferred, he asked the further pleasure of the Association.

DR. STANTON moved that, in case of an emergency arising, the Executive Council be empowered to change the time and place of holding the annual meeting; carried.

The Secretary was authorized to have two hundred and fifty copies of the constitution and by-laws printed, with the names of the foundation members included, for distribution.

Dr. Vander Veer offered a resolution tendering the thanks of the Association to the Buffalo Obstetrical Society, for its hospitality to-day, which was unanimously adopted.

On motion, the annual meeting was appointed to be held in Washington, September 18, 19, and 20, 1888.

The Secretary was directed to prepare the programme for the meeting, and to make official application for the admission of the Association to the Congress of American Physicians and Surgeons.

An informal conference was held for a short time, during which plans concerning the future interests of the Association were discussed, when,

On motion of Dr. Carstens, the Association, at 5 o'clock, adjourned.

WILLIAM WARREN POTTER,
Secretary.

CONSTITUTION AND BY-LAWS

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

CONSTITUTION.

I. The name of this Association shall be THE AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS.

II. Its object shall be the cultivation and promotion of knowledge in whatever relates to Abdominal Surgery, Obstetrics, and Gynecology.

MEMBERS.

III. The members of this Association shall consist of Ordinary Fellows, Honorary Fellows, and Corresponding Fellows.

The Ordinary Fellows shall not exceed one hundred in number.

The Honorary Fellows shall not exceed ten American and twenty-five foreign.

Candidates shall be proposed to the Executive Council one month before the first day of meeting by two Fellows, and shall be balloted for at the annual meeting, a list of names having been sent to every Fellow with the notification of the meeting.

A two-thirds vote in the affirmative of all the members present shall be necessary to elect—fifteen Fellows at least being in attendance.

All candidates for active fellowship shall submit to the Executive Council, at least one month before the annual meeting, an original paper relating to Abdominal Surgery, Obstetrics, or Gynecology.

HONORARY FELLOWS.

IV. The power of nominating Honorary Fellows shall be vested in the Executive Council.

Their election shall take place in the same manner as that of Ordinary Fellows.

They shall enjoy all the privileges of Ordinary Fellows excepting to vote or hold office, but shall not be required to pay any fee.

CORRESPONDING FELLOWS.

V. The Corresponding Fellows shall be recommended by the Executive Council, and elected by the Association.

They shall enjoy all the privileges of Ordinary Fellows, excepting to vote or hold office, and shall be entitled to a copy of the *Annual Transactions*.

They shall pay an entrance fee of twenty-five dollars.

OFFICERS.

VI. The officers of this Association shall be a President, two Vice-Presidents, a Secretary, a Treasurer, and five Executive Councillors.

The nomination of all officers shall be made in open session at the business meeting, and the election shall be by ballot.

The officers shall enter upon their duties immediately before the adjournment of the meeting at which they were elected, and shall hold office for one year.

Any vacancy occurring during the recess may be filled temporarily by the Executive Council.

ANNUAL MEETINGS.

VII. The time and place of holding the annual meeting shall be determined by the Association each time before adjournment.

It shall continue for three days, unless otherwise ordered by vote of the Association.

AMENDMENTS.

VIII. This Constitution may be amended by a two-thirds vote of all the Fellows present at an annual meeting, *provided*, that notice of the proposed amendment has been given in writing at the annual meeting next preceding; and *provided, further*, that it shall have been printed in the notification of the meeting at which the vote is to be taken.

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS.

BY-LAWS.

THE PRESIDING OFFICER.

I. The President, or in his absence one of the Vice-Presidents, shall preside at all meetings, and perform such other duties as ordinarily pertain to the Chair.

The presiding officer shall be *ex-officio* chairman of the Executive Council, but shall vote therein only in case of a tie.

SECRETARY.

II. The Secretary shall attend and keep a record of all meetings of the Association and of the Council, of which latter he shall be *ex-officio* clerk, but shall not be entitled to vote therein.

He shall collect all moneys due from the members, and shall pay the same over to the Treasurer, taking his receipt therefor.

He shall supervise and conduct all correspondence of the Association; he shall superintend the publication of the *Transactions* under the direction of the Executive Council, and shall perform all the ordinary duties of his office.

He shall be the custodian of the seal, books, and records of the Association.

TREASURER.

III. The Treasurer shall receive all moneys from the Secretary, pay all bills, and render an account thereof at the annual meetings, when an auditing committee shall be appointed to examine his accounts and records.

EXECUTIVE COUNCIL.

IV. The Executive Council shall meet as often as the interests of the Association may require. The President, or any three members, may call a meeting, and a majority shall constitute a quorum.

It shall have the management of the affairs of the Association, subject to the action of the house at its annual meetings.

It shall have control of the publications of the Association, with full power to accept or reject papers or discussions.

It shall have control of the arrangements for the annual meetings, and shall determine the order of the reading of papers.

It shall constitute a court of inquiry for the investigation of all charges against members for offences involving law or honor, and shall have the sole power of moving the expulsion of any Fellow.

ORDER OF BUSINESS.

V. The Order of Business at the annual meetings of the Association shall be as follows:

I. General Meeting at 10 o'clock A.M. each day.
   1. Reports of Committees on Scientific Questions.
   2. Reading of Papers and Discussions of the same.

II. The Business Meeting shall be held at half-past eight o'clock P.M. on the second day of the session (unless otherwise ordered by vote), at which only the Fellows of the Association shall be present. The Secretary's Record shall then be read; the Treasurer's Accounts be submitted; the Reports of Committees on other than Scientific Subjects be offered; and all Miscellaneous Business be transacted.

PAPERS.

VI. The titles of all papers to be read at any annual meeting shall be furnished to the Secretary not later than one month before the first day of the meeting.

No paper shall be read before this Association that has already been published, or that has been read before any other body.

Not more than thirty minutes shall be occupied in reading any paper before the Association.

All papers read before the Association shall become its sole property if accepted for publication; and the Executive Council may decline to publish any paper not handed to the Secretary *complete* before the final adjournment of the annual meeting.

QUORUM.

VII. The Fellows present shall constitute a quorum for all business, excepting the admission of new Fellows or acting upon amendments to the Constitution, when not less than fifteen Fellows must be present.

DECORUM.

VIII. No remarks reflecting upon the personal or professional character of any Fellow shall be in order at any meeting, except when introduced by the Executive Council.

FINANCE.

IX. Each Fellow, on admission, shall pay an initiation fee of twenty-five dollars, which shall include his dues for the first year.

Every Fellow shall pay in advance the sum of fifteen dollars annually thereafter.

Any Fellow neglecting to pay his annual dues for two years shall forfeit his membership.

The Secretary shall receive annually a draft from the President drawn on the Treasurer for a sum, to be fixed at each annual meeting, for the services he shall have rendered the Association during the year.

A contingent fund of one hundred dollars shall annually be placed at the disposal of the Secretary for current expenses, to be disbursed by him, and for which he shall present proper vouchers.

ATTENDANCE.

X. Any Fellow who shall neither attend nor present a paper for three consecutive years shall, unless he offer a satisfactory excuse, be dropped from fellowship upon vote of the Executive Council.

RULES.

XI. "Robert's Rules of Order" shall be accepted as a parliamentary guide in the deliberations of this Association.

AMENDMENTS.

XII. These By-Laws may be amended by a two-thirds vote of the Fellows present at any meeting; *provided*, previous notice in writing has been given at the annual meeting next preceding the one at which the vote is to be taken.

OFFICERS FOR 1888–1889.

PRESIDENT.

WILLIAM H. TAYLOR, Cincinnati.

VICE-PRESIDENTS.

E. E. MONTGOMERY, Philadelphia.
J. H. CARSTENS, Detroit.

SECRETARY.

WILLIAM WARREN POTTER, Buffalo.

TREASURER.

XAVIER OSWALD WERDER, Pittsburg.

EXECUTIVE COUNCIL.

THOMAS OPIE, Baltimore.
CLINTON CUSHING, San Francisco.
MELANCTHON STORRS, Hartford.
BYRON STANTON, Cincinnati.
ALBERT VANDER VEER, Albany.

HONORARY FELLOWS.

ELECTED.

1888. A. CORDES, M.D., Geneva, Switzerland.
1888. ARTHUR W. EDIS, M.D., London, Eng.
1888. J. GREIG SMITH, Bristol, Eng.
1888. LAWSON TAIT, F.R.C.S. Eng., M.D., LL.D., Birmingham, Eng.
1888. JOHN WILLIAMS, M.D., F.R.C.P., London, Eng.

CORRESPONDING FELLOWS.

1888. ADAM H. WRIGHT, B.A., M.D., Toronto, Ont.

ORDINARY FELLOWS.

FOUNDERS.

1888. ALLEN, HENRY BIGELOW, M.D. Professor of Obstetrics, College of Medicine, Syracuse University. Baldwinsville, N. Y.

1888. BAKER, WASHINGTON H., M.D. Senior Obstetrician to the Maternity Hospital; Physician to the German Hospital. 1610 Summer Street, Philadelphia, Pa.

1888. BANTA, ROLLIN LEDRUE, M.D. Consulting Obstetrician to the Maternity Hospital. 358 South Division Street, Buffalo, N. Y.

1888. BECKWITH, FRANK E., M.D. Professor of Clinical Gynecology, Yale University; Gynecologist to the New Haven Hospital. 139 Church Street, New Haven, Conn.

1888. BOYD, JAMES PETER, A.M., M.D. Professor of Obstetrics and the Diseases of Women and Children, Albany Medical College; Gynecologist to the Albany Hospital; Consulting Obstetric Surgeon to St. Peter's Hospital. 212 State Street, Albany, N. Y.

1888. CARSTENS, JOHN HENRY, M.D. Professor of Obstetrics and Clinical Gynecology, Detroit College of Medicine; Gynecologist to Harper Hospital; Attending Physician to the Woman's Hospital; Obstetrician to the House of Providence. *Vice-President*, 1888. 21 Macomb Street, Detroit, Michigan.

1888. CARSON, NORMAN BRUCE, M.D. Surgeon to the St. Louis Mullanphy Hospital; Surgeon to the Augusta Free Hospital; Surgeon to St. Vincent's Insane Hospital; Consulting Surgeon to the City Hospital; Adjunct Professor of Surgery, St. Louis Medical College. 209 North Jefferson Avenue, St. Louis, Mo.

1888. CLARKE, AUGUSTUS PECK, M.D. 693 Main Street, Cambridge, Mass.

1888. CUSHING, CLINTON, M.D. Professor of Gynecology in Cooper Medical College. *Executive Council*, 1888. 636 Sutter Street, San Francisco, Cal.

1888. DUNHAM, J. M., M.D. Professor of Diseases of Women and Children in Columbus Medical College; Gynecologist to Hawkes Hospital. 222 East Town Street, Columbus, Ohio.

1888. ELIOT, LLEWELLYN, M.D. Surgeon to the Eastern Dispensary; Attending Physician to St. Ann's Infant Asylum. 510 E Street, N. W., Washington, D. C.

1888. GLASGOW, FRANK A., A.B., M.D. In charge of the Female Medical, Children's Medical, and the Gynecological Departments of the St. Louis Mullanphy Hospital; Lecturer on Clinical Gynecology in the St. Louis Medical College; Physician and Pathologist to the Augusta Free Hospital for Children; Consultant to the St. Louis (city) Female Hospital. 3016 Glasgow Place, St. Louis, Mo.

1888. HILL, HAMPTON EUGENE, M.D. Saco, Maine.

1888. ILL, EDWARD JOSEPH, M.D. Surgeon to the Woman's Hospital; Gynecologist to St. Barnabas' and Physician to the German Hospitals. 1002 Broad Street, Newark, N. J.

1888. JARVIS, GEORGE CYPRIAN, M.D. Visiting Physician and Surgeon to the Hartford Hospital. 98 High Street, Hartford, Conn.

1888. KELLOGG, JOHN HARVEY, M.D. Battle Creek, Michigan.

1888. LOTHROP, THOMAS, M.D. Professor of Obstetrics, Niagara University; Obstetrician to the Maternity Hospital; Physician to St. Francis' Hospital; Consulting Physician to the Hospital of the Sisters of Charity. 260 Pearl Street, Buffalo, N. Y.

1888. MCARDLE, THOMAS EUGENE, A.M., M.D. Professor of Minor Surgery in the National Medical College; Lecturer on Surgical Nursing in the Training School for Nurses. 707 Twelfth Street, N. W., Washington, D. C.

1888. MCMURTRY, LEWIS S., A.M., M.D. Danville, Kentucky.

1888. MANTON, WALTER PORTER, M.D. Visiting Physician to the Woman's Hospital. 83 Lafayette Avenue, Detroit, Mich.

1888. MARCY, HENRY ORLANDO, A.M., M.D., LL.D. 116 Boylston Street, Boston, Mass.

1888. MAXWELL, THOMAS JEFFERSON, M.D. Professor of Obstetrics and Gynecology, College of Physicians and Surgeons; Surgeon to St. Joseph's Hospital. 727 North Ninth Street, Keokuk, Iowa.

1888. MILLER, AARON BENJAMIN, M.D. Instructor in Gynecology, Medical Department of Syracuse University; Gynecologist to the House of The Good Shepherd. 22 West Fayette Street, Syracuse. N. Y.

1888. MONTGOMERY, EDWARD EMMETT, B.S., M.D. Professor of Didactic and Clinical Gynecology in the Medico-Chirurgical College; Gynecologist to the Medico-Chirurgical Hospital; Obstetrician to the

Philadelphia Hospital. *Vice-President*, 1888. 1818 Arch Street, Philadelphia, Pa.

1888. Moses, Gratz Ashe, M.D. Professor of Obstetrics and Gynecology in the Missouri Medical College; formerly in charge of the Women's Department, St. Louis Hospital, and Clinical Lecturer in Gynecology, St. Louis Medical College; Physician to Augusta Hospital; Consultant to the St. Louis Female Hospital. 2901 Washington Avenue, St. Louis, Mo.

1888. Myers, Wlliam Henchel, M.D. 157 West Wayne Street, Fort Wayne, Ind.

1888. Opie, Thomas, M.D. Dean and Professor of Obstetrics and Gynecology, College of Physicians and Surgeons; Attending Obstetrician to the Maryland Maternity; Surgeon in charge of the Maryland Woman's Hospital. *Executive Council*, 1888. 600 North Howard Street, Baltimore, Md.

1888. Potter, William Warren, M.D. Consulting Gynecologist to the Maternity Hospital. *Secretary*, 1888. 284 Franklin Street, Buffalo, N. Y.

1888. Price, Joseph, M.D. Visiting Surgeon to the Gynecian Hospital; Physician in Charge of the Preston Retreat; Physician in Charge of the Obstetrical and Gynecological Department of the Philadelphia Dispensary. 500 North Twentieth Street, Philadelphia, Pa.

1888. Reed, Charles Alfred Lee, A.M., M.D. Professor of the Surgical Diseases of Women in the Cincinnati College of Medicine and Surgery; Professor of Gynecology at the Woman's Medical College. 311 Elm Street, Cincinnati, Ohio.

1888. Shepherd, George Rubens, M.D. 667 Asylum Avenue, Hartford, Conn.

1888. Stanton, Byron, M.D. Professor of Diseases of Women and Children, and Clinical Gynecology, Miami Medical College. 157 Dayton Street, Cincinnati, Ohio.

1888. Stewart, William Shaw, A.M., M.D. Professor of Obstetrics and Clinical Gynecology, Medico-Chirurgical College; Gynecologist to the Medico-Chirurgical Hospital. 1801 Arch Street, Philadelphia, Pa.

1888. Storrs, Melancthon, A.M., M.D. Attending Surgeon to the Hartford Hospital. *Executive Council*, 1888. 91 Ann Street, Hartford, Conn.

1888. TAYLOR, WILLIAM HENRY, M.D., Ph.D. Dean and Professor of Obstetrics, Miami Medical College; Obstetrician to the Cincinnati Hospital. *President*, 1888. 329 West Seventh Street, Cincinnati, Ohio.

1888. TOWNSEND, FRANKLIN, A.M., M.D. Professor of Physiology, Albany Medical College; Visiting Obstetrician and Gynecologist to St. Peter's Hospital; Visiting Physician to the Albany Protestant Orphan Asylum. 2 Park Place, Albany, N. Y.

1888. VANDER VEER, ALBERT, A.M., M.D., Ph.D. Professor of Clinical, Didactic, and Abdominal Surgery, Albany Medical College; Attending Surgeon to the Albany Hospital; Consulting Surgeon to St. Peter's Hospital. *Council*, 1889. 28 Eagle Street, Albany, N. Y.

1888. WATHEN, WILLIAM HUTSON, M.D. Dean and Professor of Obstetrics and the Diseases of Women, Kentucky School of Medicine; Consulting Gynecologist to the Louisville City Hospital. 405 West Chestnut Street, Louisville, Ky.

1888. WEBBER, N. W., M.D. Professor of Gynecology and Obstetrics, Detroit College of Medicine. 25 Rowland Street, Detroit, Mich.

1888. WERDER, XAVIER OSWALD, M.D. Gynecologist to the Free Dispensary; Consulting Gynecologist to St. Francis's Hospital. *Treasurer*, 1888. 111 Steuben Street, W. E., Pittsburg, Pa.

Total, forty Fellows.

MINUTES OF THE PROCEEDINGS

AT THE

FIRST ANNUAL MEETING

OF THE

AMERICAN ASSOCIATION

OF

OBSTETRICIANS AND GYNECOLOGISTS,

HELD IN THE

NATIONAL MEDICAL COLLEGE BUILDING,

H Street, N. W., Washington, D. C.

SEPTEMBER 18, 19, AND 20, 1888.

FIRST ANNUAL MEETING.

WASHINGTON, TUESDAY, WEDNESDAY, AND THURSDAY, SEPTEMBER 18, 19, AND 20, 1888.

THE following named Fellows were present:

BANTA, ROLLIN L.	BUFFALO.
BOYD, JAMES P.	ALBANY.
CLARKE, AUGUSTUS P.	CAMBRIDGE.
ELIOT, LLEWELLYN	WASHINGTON.
HILL, HAMPTON E.	SACO, ME.
ILL, EDWARD J.	NEWARK.
KELLOGG, J. H.	BATTLE CREEK, MICH.
McARDLE, THOMAS E.	WASHINGTON.
MARCY, HENRY O.	BOSTON.
MAXWELL, THOMAS J.	KEOKUK.
MILLER, AARON B.	SYRACUSE.
McMURTRY, LEWIS S.	DANVILLE, KY.
MONTGOMERY, E. E.	PHILADELPHIA.
MOSES, GRATZ ASHE	ST. LOUIS.
OPIE, THOMAS	BALTIMORE.
PRICE, JOSEPH	PHILADELPHIA.
POTTER, WILLIAM WARREN	BUFFALO.
STANTON, BYRON	CINCINNATI.
STEWART, WILLIAM S.	PHILADELPHIA.
TAYLOR, WILLIAM H.	CINCINNATI.
TOWNSEND, FRANKLIN, JR.	ALBANY.
VANDER VEER, A.	ALBANY.
WATHEN, WILLIAM H.	LOUISVILLE.
WERDER, X. O.	PITTSBURG.

Total, twenty-four Fellows.

Letters or messages of regret were received from the following named Fellows: Dr. J. H. Carstens, *Vice-President*, Detroit; Dr. N. B. Carson, St. Louis; Dr. Clinton Cushing, San Francisco; Dr. J. M. Dunham, Columbus; Dr. George C. Jarvis, Hartford; Dr. Thomas Lothrop, Buffalo; Dr. William H. Myers, Fort Wayne; Dr. W. P. Manton, Detroit; Dr. Charles A. L. Reed, Cincinnati; and Dr. N. W. Webber, Detroit.

Upon recommendation of the Executive Council, the following named physicians were invited, by unanimous vote of the Association, to attend its sessions, and take part in the discussions:

Dr. Theophilus Parvin, Dr. John B. Deaver, and Dr. J. M. Baldy, of Philadelphia; Dr. George H. Rohé, of Baltimore; Dr. Edwin Ricketts and Dr. G. M. Allen, of Cincinnati; Dr. H. T. Byford and Dr. Franklin H. Martin, of Chicago; Dr. E. W. Cushing, of Boston; Dr. H. M. Weeks, of Trenton, N. J.; Dr. Charles Jewett, of Brooklyn; Dr. David Prince, of Jacksonville; Dr. F. E. Maxcey, of Saco, Me.; Dr. Bernard Burns, of Allegheny City; Dr. A. Lapthorn Smith, of Montreal; Dr. S. C. Gordon, of Portland, Me.; Dr. Mary A. Dixon Jones, of Brooklyn; Dr. Sarah E. Post, of New York; Dr. Thad. A. Reamy, of Cincinnati; Dr. Midleton Michel, of Charleston; Dr. S. C. Busey, President, and the members of the Washington Obstetrical and Gynecological Society.

FIRST DAY—*Tuesday, September 18th.*

Morning Session.—The meeting was called to order at 10 o'clock A.M., by the President, Dr. Wm. Henry Taylor, of Cincinnati.

The roll was called by the Secretary and twenty-four Fellows answered to their names.

THE PRESIDENT then said: The medical profession of Washington City long ago established its reputation for hospitality; but to-day it has gone a little further than merely establishing a reputation. An honorable member of that distinguished body, one of our Fellows, has done us the kindness to come to our meeting to say to us in words that we are welcome here, and to extend to us a hospitable greeting. I have the pleasure of introducing Dr. T. E. McArdle, of Washington.

DR. MCARDLE. Mr. President and Fellows: It affords me very great pleasure to welcome the American Association of Obstetricians and Gynecologists to the beautiful capital of our country. It is eminently fitting that your first meeting should be held here. Everything, you know, for the good of the nation has its birth in Washington. Undoubtedly the work of this Association will be of benefit, not only to the people of these United States, but to the inhabitants of the whole world.

As lovely woman rules the world, so her doctor comes in for a share of reflected glory. You are, therefore, to be congratulated upon the

organization of an association devoted to the interests of so important a part of the human race. The efforts to relieve woman in her hour of need merit the approval of every lover of his kind.

Gathered here at the national capital, and discussing questions of such vital importance to present and future generations, your proceedings will be watched with an intensity of interest vouchsafed to but few Conventions. Washington congratulates herself in having you as her guests, and, in her name, I extend to you a most cordial welcome. I trust you will enjoy every moment of your sojourn and carry none but pleasant memories on your departure from our midst. It is true you have left yourselves but little time to see the many attractions of our city, but I trust the passing glimpse will incite each of you to come again and give yourselves more extended time to enjoy Washington's attractive features. Again, gentlemen, I bid you welcome.

THE PRESIDENT: I am very sure that the members of our Association will heartily endorse what I may say in returning our thanks to Dr. McArdle for his cordial welcome to Washington. We certainly feel that it is a favor to us that the profession here, in this distinctive way, should say that they do receive us cordially.

Before coming to the printed programme, the Secretary will read to you a number of letters that have been received from abroad. Early in the spring invitations were forwarded to a number of distinguished gentlemen on the other side of the water, and we have had cordial responses from all. A few minutes will be taken to read to you some of these replies.

THE SECRETARY then read letters from the following named invited guests, who regretted their inability to attend, viz.:

Mr. Lawson Tait, of Birmingham, Eng.; Dr. George Granville Bantock; Dr. Arthur W. Edis, President of the British Gynecological Society; Dr. John Williams, President of the London Obstetrical Society; Prof. Crédé, of Leipsic; Dr. A. Martin, of Berlin; Prof. F. Winckel, of Munich; Dr. G. Apostoli, of Paris; Dr. A. Cordes, of Geneva, Switzerland; Dr. A. E. Aust-Lawrence and Mr. J. Greig Smith, of Bristol; Dr. J. Mathews Duncan, of London, Eng.

Papers were read as follows:

1. "Endometritis Treated by Injections of Pure Nitric Acid," by Dr. A. Cordes, of Geneva, Switzerland. Read by the Secretary.

2. "Drainage in Abdominal and Pelvic Surgery," by Dr. Joseph Price.

3. "A Contribution to the Study of Pelvic Abscess," by Dr. Clinton Cushing. Read by the Secretary.

Papers 2 and 3 were discussed by Dr. W. W. Potter, Dr. E. E. Montgomery, Dr. Henry O. Marcy, Dr. A. Lapthorn Smith, Dr. Augustus P. Clarke, Dr. A. Vander Veer, and Dr. Joseph Price.

Afternoon Session.

4. "Laparatomy in Peritonitis," by Dr. E. E. Montgomery.

Discussed by Dr. Marcy, Dr. Clarke, Dr. Ricketts, of Cincinnati; Dr. Thomas Opie, and Dr. E. E. Montgomery.

5. "The Relation of the Abdominal Surgeon to the Obstetrician and Gynecologist," by Dr. A. Vander Veer.

Discussed by Dr. S. C. Gordon, of Portland, Me., and Dr. W. W. Potter.

6. "The Surgical Treatment of the Perineum," by Dr. Wm. H. Wathen.

7. "The Female Perineum; its Anatomy, Physiological Function, and Methods of Restoration after Injury. Illustrated by Lantern Slides." By Dr. Henry O. Marcy.

SECOND DAY—*Wednesday, September 19th.*

Business meeting at 9 o'clock A.M. The President in the Chair. The minutes of the initial meeting were read and approved.

The Treasurer made his report as follows:

Receipts,		$650.00
Disbursements.		
Contingent fund	$100.00	
Bills, printing, stationery, etc.	107.20	
Total		207.20
Balance on hand		442.80

The Secretary reported the disbursement of the contingent fund, with abstract and vouchers.

On motion, Drs. Boyd and Banta were appointed an auditing committee; they subseqently reported the accounts and vouchers of the Secretary and the Treasurer as correct.

On motion, the Secretary was authorized to draw upon the Treasurer for such sums of money as might be necessary to publish the *Transactions*, in accordance with the accepted bid of William J. Dornan, of Philadelphia.

In response to the application of the Association to be admitted to the Congress of American Physicians and Surgeons the following was received:

"At a Special Meeting held at Willard's Hotel, September 18, 1888, it was resolved unanimously, that it is the sense of this Executive Committee that they will not consider the application of any society which has not held at least two annual meetings."

"I have the honor to remain,

"Yours faithfully,

"WILLIAM PEPPER,

"Chairman."

On motion of Dr. William H. Taylor, it was unanimously voted to hold the next Annual Meeting in the City of Cincinnati, upon a date to be fixed by the Executive Council.

On motion of Dr. E. E. Montgomery, the salary of the Secretary was fixed at $300 for the past year.

The Committee on Seal, consisting of Dr. Franklin Townsend and the Secretary, presented its report, recommending the adoption of a seal in accordance with a drawing made and submitted by Tiffany & Co., New York; adopted.

Dr. Thomas Opie suggested that the name of the Association be changed to The American Association of Obstetricians. After some discussion, it was decided that as the question involved a change in the constitution it would necessarily lie over until next year; whereupon, Dr. E. E. Montgomery offered the following in writing:

That Section 1, Article 1 of the Constitution be changed to read as follows: The name of this Association shall be "The American Association of Obstetricians."

The Secretary in behalf of the Council presented a list of names as nominations for honorary and corresponding fellowship. The Association then elected unanimously by ballot the following gentlemen: Honorary Fellows: Mr. Lawson Tait, of Birmingham, England; Mr. J. Greig Smith, of Bristol, England; Dr. John Williams, of London, England; Dr. Arthur W. Edis, of London, England; Dr. A. Cordes, of Geneva, Switzerland.

Corresponding Fellow: Dr. Adam H. Wright, of Toronto, Ontario.

Votes of thanks to Dr. Thomas E. McArdle for his "Address of Welcome;" to Dr. S. C. Busey, Chairman of the Committee of Arrangements of the Congress of American Physicians and Surgeons, for courtesies extended; and to Dr. A. F. A. King, and his associates in the Faculty of the National Medical College, for the use of their building during the sessions of the Association, were unanimously passed.

A resolution of sympathy to Dr. John B. Hamilton, Surgeon-General U. S. Marine-Hospital Service, and his colaborers in the yellow fever district, was also unanimously passed.

The Association then proceeded by ballot to the election of officers for the ensuing year, which resulted as follows: *President*, William Henry Taylor, Cincinnati. *Vice-Presidents:* E. E. Montgomery, Philadelphia; and J. Henry Carstens, Detroit. *Secretary*, William Warren Potter, Buffalo. *Treasurer*, Xavier Oswald Werder, Pittsburg. *Executive Council:* Thomas Opie, Baltimore; Clinton Cushing, San Francisco; Melancthon Storrs, Hartford; Byron Stanton, Cincinnati; and A. Vander Veer, Albany.

The Business Meeting then adjourned.

Morning Session, 10.30 A. M.

The President in the Chair.

8. "Double Ovariotomy During Pregnancy; Subsequent Delivery at Term," by Dr. W. W. Potter, of Buffalo.

Discussed by Drs. Vander Veer, Montgomery, Maxwell, and Potter.

9. "The Treatment of Puerperal Eclampsia," by Dr. A. Cordes, of Geneva, Switzerland. Read by the Secretary.

10. "Induced Premature Labor," by Dr. Byron Stanton, of Cincinnati.

Papers 9 and 10 were discussed by Drs. Price, Potter, Opie, A. Lapthorn Smith, Clarke, and Stanton.

11. "Is the Frequent Use of Forceps Abusive?" by Dr. Thomas Opie, of Baltimore.

Discussed by Drs. Joseph Price, Franklin Townsend, A. P. Clarke, Stewart, and Opie.

12. "Intraperitoneal Hematocele with Suppuration," by Dr. J. H. Scarff, of Baltimore (by invitation).

At 2.30 P. M., after one continuous session, the Association adjourned until Thursday morning.

THIRD DAY—*Thursday, September 20th.*

Morning Session.—10 o'clock. The President in the Chair.

Papers were read as follows:

13. "The Diagnosis and Treatment of Uterine Fibroids," by Dr. Thomas J. Maxwell, of Keokuk, Iowa.

14. "An Unusual Case of Subserous Uterine Fibroid, with Operation," by Hampton E. Hill, of Saco, Maine.

15. "Desmoid (Fibroid) Tumors of the Abdominal Walls," by Dr. Edward J. Ill, of Newark, N. J.

16. "Fibroid Tumors of the Abdominal Wall," by Dr. Charles A. L. Reed, of Cincinnati.

17. "Some Diseases of the Skin Associated with Sexual Disorders in the Female," by Dr. G. H. Rohé, of Baltimore (by invitation).

18. "Some Minute but Important Details in the Management of the Continuous Current in Gynecology," by Dr. A. Lapthorn Smith, of Montreal (by invitation).

19. "Discussion of Extra-uterine Pregnancy." (*a*) Its pathology, by Dr. Franklin Townsend, of Albany. (*b*) Its Diagnosis, by Dr, Joseph Price, of Philadelphia. (*c*) Its Treatment, by Dr. E. E. Montgomery, of Philadelphia. (*d*) Its Treatment, continued, by Dr. A. Vander Veer, Albany.

This subject was further discussed by Dr. Wm. H. Wathen, Dr. J. M. Baldy, of Philadelphia; Dr. Henry T. Byford, of Chicago; L. S. McMurtry; and by Dr. John B. Deaver of Philadelphia.

The following papers were read by title:

"Vaginal Tamponnement in the Treatment of Prolapsed Ovaries," by Dr. W. P. Manton, of Detroit. "Heart Failure in the Puerperium," by Dr. Thomas Lothrop, of Buffalo. "A New Operation for the Repair of Lacerated Perineum," by Dr. Bernard Burns, of Allegheny City. "Hysterectomy for Malignant Diseases of the Uterus," by Dr. Wm. Wathen, of Louisville, Ky. "A Case of the Removal of Uterine Appendages," by Dr. Frank A. Glasgow, St. Louis. "Hyaline Metamorphosis of the Placenta, Death of the Fetus in the Fourth Month, and Delivery of the Unbroken Ovum at Term"; including a "Pathological Demonstration," by Dr. Wm. H. Welch, of Johns

Hopkins University, of Baltimore, Md. By Dr. Sarah E. Post, of New York. "A Contribution to the Study of the Reflex Neuroses of Pregnancy, with a Case of Aphasia Gravididatis," by Dr. G. A. Moses, of St. Louis, Mo. "Report of Sixty-three Cases of Alexander's Operation," by Dr. John H. Kellogg, of Battle Creek, Michigan. "The Influence of the Sexual Life of Woman in the Etiology of Certain Diseases of the Ear," by Dr. Thomas E. McArdle, of Washington, D. C. "The Resuscitation of Asphyxiated Newborn Infants by the Suspension Method," by Dr. L. Eliot, of Washington, D. C.

The session continued until 3 o'clock P. M., when it was closed by the President in the following remarks:

In closing this First Annual Meeting of this Association, permit me to congratulate the Fellows, one and all, upon the successful beginning that has been made. An organization that can accomplish so much good work at the threshold of its existence, certainly may look trustingly forward to a useful, if not brilliant, future; and no one can have higher hope for, or greater faith in, such a consummation, I am sure, than myself.

It is but seemly that I should cordially and feelingly return my thanks for the surprising honor you have conferred upon me, by a second election to the Chair. While doubting the wisdom thereof, in view of the many others who deserve the honor more, I am certain that I neither courted nor expected it. Since, however, you have fairly thrust it upon me, I accept its duties in the spirit of a soldier who obeys dutifully the orders of his superiors, trusting to your cordial support in their performance.

It remains for me to promise you a cordial welcome to Cincinnati next year. With pleasant memories lurking in my thoughts of this meeting, and a kindly wish for the happiness and prosperity of each and every Fellow, I bid you farewell.

Adjourned to meet in Cincinnati on the call of the Executive Council.*

WILLIAM WARREN POTTER,
Secretary.

* The Executive Council subsequently decided upon Tuesday, Wednesday, and Thursday, September 17, 18, and 19, for the annual meeting of 1889.

PAPERS

READ AT THE

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NATIONAL MEDICAL COLLEGE BUILDING,

WASHINGTON, D. C.

SEPTEMBER 18, 19, AND 20, 1888.

THE PRESIDENT'S ANNUAL ADDRESS.

By WILLIAM HENRY TAYLOR, M.D.,
CINCINNATI.

Fellows of the American Association of Obstetricians and Gynecologists: Under the very auspicious circumstances which have attended this meeting, I esteem it a high honor to have been made its presiding officer, and I feel it incumbent upon me to express my sense of obligation to you for placing me in this position; at the same time, I must say that I appreciate the great responsibility and have felt the need of your generous consideration in my efforts to discharge its duties.

On the assembling of this Association for the first time, it may be very proper to demand a reason for its existence. The daily round of professional experience impresses the practitioner of medicine with the incompleteness of his knowledge, and to the man who sees in his avocation something more than a mere source of pecuniary profit, there must arise the desire to know the yet unknown. No argument is needed to prove the assertion that the united effort of many is more fruitful than the inharmonious working of individuals, hence the propriety of coöperation, organization. In the words of an eloquent member of another profession, "It seems very certain that the world is to grow better and richer in the future, not by the magnificent achievements of the highly gifted few, but by the patient faithfulness of the one-talented many."

It may be admitted that the motive of our Association is, first, our own advancement; yet it cannot be considered undue self-adulation if we believe that from such combined effort good must come to the profession at large, and necessarily through the profession to those who, above all others, are interested in the perfection of our knowledge and skill—our clients.

The activity of the past decade has given us so many important

facts that it would scarcely be hyperbole to say that a new practice of obstetrics and gynecology has been created in that time, and no words of mine can in any full degree express the wonderful benefactions of the recent advances thus made; but the very fact that there has been such progress, and that so much that but a few years ago was impracticable or even unknown, is now feasible and well known, only stimulates us to better work and further advance; and with the vast range of study and the diversity of subjects now comprehended by the science of medicine, it is clear beyond controversy that advance can be made only by men directing their efforts to a limited field of work.

Such, gentlemen, I believe, are sufficient reasons for our presence here to-day, as the American Association of Obstetricians and Gynecologists; and never in the history of our profession have the auguries been so auspicious for the accomplishment of the purposes set before us, as evinced by the cosmopolitan harmony and close association of our profession in all parts of the world, in the facilities for the speedy transmission of every item of interest, of every discovery, and every suggestion, and, more important than all else, by the number of devoted workers who, animated by no unworthy craving for worldly honor or love of gain, are delving into the mysteries of the human frame, scrutinizing every group of asserted facts, as the slave does his handful of earth for the diamond; and what matter if the enthusiast does cry out in exultation over what may prove not to be a gem! yet the precious stones of truth that are found abundantly pay for the toil.

While I have felt the great honor of my position, I have also realized the great difficulty of bringing anything before you worthy of your attention or that may, even in a small degree, contribute to the success of our organization. The past work of our branch of practice is so recent and so entirely familiar to you that it would be altogether inappropriate to take any time in presenting it; a glance at the programme laid before us will convince you that the various practical topics which are so important, are to constitute much of the subject-matter for discussion here, and therefore it is inexpedient for me to dwell upon them now, great as is the temptation so to do. The proper indications for abdominal section; the true position which electricity shall occupy in gynecology; the propriety of hysterectomy; the value of Alexander's operation and its newly

devised congener, abdominal fixation, for retro-deviations of the uterus; the relative merits of craniotomy, Cæsarean section, and induced labor; the best method of dealing with extra-uterine pregnancy; the proper means of securing antisepsis: are all questions fraught with great interest, and merit the most thorough study; and so confident am I that before this meeting closes much light will be shed upon many or all of them by your deliberations, that I shall pass them by without further consideration. Having remitted to your care those topics which undoubtedly claim most of your attention and awaken most of your interest, I am constrained to bring before you subjects which may seem of little import, but you will at once agree with me that, in the daily routine with most of us, the less important subjects are those which most constantly demand our thoughts, and assuredly nothing which contributes to the welfare of those who require our care can be too trivial for our study.

Let me now direct your attention to what, in my opinion, are subjects worthy of our earnest thought, premising my remarks with the statement that the Association must not be held responsible for the opinions of any individual, and especially can there be no *ex cathedra* utterances promulgated, but each member must be held accountable for his own sentiments.

So grand have been the results of abdominal section for diseases of women, in the hands of skilled men in our own land and abroad, that only words of highest commendation are appropriate.

These achievements which challenge our admiration, and demand the grateful acknowledgment of all who are interested in the mitigation of suffering, are the results of years of toil and conscientious study; but unhappily the success is seen while the steps which led to it are overlooked: as a consequence, men without the professional or moral qualifications for such responsible services have been drawn into this line of work, till I am sure I am justified in the assertion that to-day laparatomy is done too often, and with insufficient grounds for so serious a procedure. Dr. Parvin has recently said: "It cannot be denied that there is a growing belief in the professional mind that these operations are too frequently resorted to, and, therefore, their indications ought to be clearly established, and the presence of the latter conclusively demonstrated before a woman is subjected to what otherwise is an odious mutilation. The results of the opera-

tion have been so satisfactory, is there not danger of its being too frequently performed? Nay, is there not danger that men without experience, deceived by the glamour of brilliant statistics, and ambitious of fame as operators, will decide upon and perform these operations when there is no necessity for them, and no benefit follows them, or they are fatal?" That such complaints are well grounded, unfortunately, cannot be denied, but this admission by no means implies that the operation is to be condemned; through all history great advances in every sphere of life have had unworthy advocates, whose existence only serves to establish the value of the cause they champion. And in our own profession, have not vaccination, and anæsthesia, and ovariotomy been subject to such animadversion and misinterpretation, and yet have vindicated their claim to the position of benefactions to the human race? So shall it be with laparatomy, and surely it is well within the province of this Association to establish more clearly the propriety of the operation, remove unreasonable objections, and seek to prevent its undue performance.

An opinion has large credence among the laity, and is endorsed by some members of our profession, that *intentional abortion* is a common crime, and statisticians and social scientists see in the decreasing fecundity of American women clear evidence of the truth of this charge; that some women are guilty admits of no doubt, but that it is so universal an evil as sensational literature, especially of non-professional origin, would indicate, I do not believe. Permit me to direct your attention to a more demonstrable cause for diminishing fertility.

I need but remind you of the deleterious influence of social habits and circumstances over the functions and physique of women, and, consequently, how many fashionably educated girls are incapable of completing the process of maternity, or, if they do pass through it, how seriously they are damaged thereby. Those who are fond of charging American women with the crime referred to, cite us to the rich, the educated, the refined, as guilty, while their sisters who are less favored financially, and are humbler socially, bear their due proportion of children. Now, is it not a truthful statement, that the first class are the physically feeble, the enervated, and, *therefore*, incapable of carrying the process of reproduction to its ultimate perfection? To corroborate this view, Dr. W. W. Johnson has

recently said that "the confirmed ill-health so common after the establishment of the marriage relation and childbirth among American women, in a large number of cases, is dependent upon diseases and alterations of the genitalia," which, probably, are the more intense because of the original debility of the subject; and Dr. J. C. Hoag says "That a lack of fecundity on the part of a woman is often due to endometritis, and is overcome by the cure of the diseased condition, is a matter of frequent clinical experience;" and Kleinwächter has shown that, of ninety cases of sterility after the birth of one child, nearly one-half were subject to inflammatory processes of the genitalia. Accept these statements as true, and a rational explanation of the asserted evil is not only found, but it is at once transferred from the domain of ethics and morals to within the pale of our professional care, and at the same time vindicates those whom we look upon as the purest and best from the indiscriminate charge of murder of their unborn children.

I believe the influence of the genitalia over the general system, especially in its nervous manifestations, has been greatly exaggerated. The idea expressed in classic language that "Woman is, because of the uterus," or, more correctly, "because of the ovaries," though in some respects true, has led to false deductions and erroneous practices.

J. Matthews Duncan has recently said, "The influence of disease of the ovaries is not so potent or important as that of the liver, on the health of the individual," and the careful study of Dr. Grace Peckham is strong testimony against the disproportionate influence of morbid conditions of the organs of generation. Uherek thinks that entirely too much attention has been paid to the genital organs in connection with neuroses, even if there are lesions which have resulted from parturition; the general condition should receive a large share of attention; and observations on the results of operations for nervous diseases confirm these views. Our associate, Dr. W. H. Wathen, has recently said, "The removal of healthy ovaries or tubes to cure epilepsy or vague nervous diseases not due to irritation of the pelvic organs, was not more consistent than the castration of a man for similar purposes;" and our associate, Dr. A. Vanderveer's, experience regarding hystero-epilepsy, was that it had not been cured by removal of the appendages; and Parvin, quoting Reverdin, says that among all the cases of castration for nervous diseases in

Paris, very many have not resulted favorably. Now, with such testimony, is it not incumbent on us at least to utter an admonition against the removal of the normal ovaries for lesions of the nervous system?

A subject of practical importance, urgently demanding attention from the obstetrical section of our Association, is the constantly increasing inability of women who should be "nursing mothers" to furnish milk for their infants; no words from me are needed to impress upon you the fact that many women who have borne children are incapable of nourishing them; but perhaps you have not appreciated the fact of the very large proportion who are thus defective, probably about forty per cent. with us, and according to the investigations of Escherich and others, in Bavaria, fifty-nine per cent. of mothers become incapable from physical causes of nursing their children within two months after delivery. The incapacity to perform this function, upon which more than any other the well-being of the child depends, is in large degree the result of habits tending to impair the integrity of the mammary gland, as vicious modes of dress, disregard of maternal duty, and even sometimes the voluntary suppression of the developing gland—conditions of great gravity in their immediate effect upon the offspring; but, multiplied and extended in their influence for evil, for, as shown by Altman, they may lead to inherited atrophy of the secreting structure of the mamma. May we not hope, by applying the laws of evolution, to bring about a better secreting organ, as is so successfully done in inferior animals?

Another topic well worthy of our most careful thought is, What can be done to mitigate the pains of labor? We all, probably, have adopted the custom of lessening the intensity of suffering in the latter part of the second stage by the use of anæsthetics, and almost as common is the use of chloral at an early period; but my impression is that with the great majority of obstetricians but little is done to lessen pain during a large part of the process of delivery.

With the abundant therapeutic resource of the present day, we ought surely to divest this ordeal of the intensity of its pain. I trust, by another meeting, to report upon some experiments I am now making in this direction.

Our highest conception of a benefactor is one who prevents evil, rather than one who mitigates or seeks to cure the evil after its

development. While the duties of the physician are to a very great degree limited to the removal of existing disease, and in such office he must gain his most *obvious* triumphs, yet all will concur with me that our whole duty will not be done unless we seek to *prevent* many of the ills we so often are called upon to cure; and herewith I feel that I offer you one of the most difficult problems to solve. In adopting a new remedy or advocating a new procedure in surgery we address men whose training qualifies them to judge carefully and appreciate the means and the end in view; but to advocate hygienic or preventive measures we appeal at once to the laity, and invoke the coöperation of those who are little disposed to make the effort demanded.

But this indifference is neither the sole reason nor the most potent cause for the imperfect results accruing from labor in this direction. History plainly teaches us that physical degeneracy has been an invariable sequence of national success and financial prosperity. I need only remind you of the fact that the most learned and prosperous nation in each age of the world has succumbed to a less civilized race; to borrow from a recent writer, "It is the old, old story of riches, luxury, and effeminacy, and a horde of athletic savages. Once let the conventionalities and artificial restrictions of a so-called civilization interfere with the healthful simplicity of Nature, and decay is certain." Must we not admit the essential truth of this statement? How fragile are many of the women with whom we have to deal! Time forbids that I should go into details, but you are well aware that the methods of culture—physical, intellectual, and social—to which a girl is subjected, not only do not conduce to physical vigor, but lead to positive deterioration and serve to magnify the defects of constitution which may have been derived from ancestry, and as the struggle for bread-winning grows sharper, the girls of the humbler classes are subjected to hardships which impair their powers and retard healthful development; it has been clearly shown that the anæmia of puberty is much more common among girls who pursue sedentary occupations and in cities than in the country. Recognizing the existence of these influences inimical to the health of women, it becomes especially a duty of men in our section of the profession to strive to effect their removal.

While presenting these topics to you as worthy the consideration of an assemblage so competent to investigate all that pertains to the

science and practice of obstetrics and gynecology, I have been much impressed with the value of a carefully prepared system of collective investigation by which the experience of so large a number of active workers might be collated, and made to contribute largely to the decision of mooted points of practice.

The beneficent result of comparative study of a given topic is remarkably demonstrated in the modifications of Lister's methods of disinfection. With what alacrity did nearly all operators adopt his suggestions, how speedily did they learn that much of his method was superfluous, and how little now remains of the original system! and yet we will all bear glad testimony to the soundness of his principle and to the glorious fruit it has borne.

So, too, the Cæsarean section upon which have been grafted so many modifications, nearly all of which have been submitted to the criticism of practical experience and have been cast aside as harmful or at least needless; with such examples no further argument is required to establish the value of a carefully devised system of case-taking and reporting under our supervision.

But one thought more, and I have done. Grand as *has* been the success of our profession, we are not to rest here. We can appeal to our past experience and realize the instability of much that may have cost us great toil. Slightly to change a remark of Dr. Alexander Simpson, "Doctrines and practices in favor at this Congress are sure to be modified and may be even superseded at the next; the lapse of five years takes the bloom off the best text-books, and in ten years they are discarded or have to be well-nigh rewritten."

Science knows no sentiment, and we can cherish the achievements of the past only so far as they aid us for the future; and what is our future? That the rapidly changing character of our population, due to the influx of so many of diverse nationalities, shall influence the morbidity of our people, admits of no doubt, and as the various districts of country, differing in climate, in soil, and in production, become more thickly settled, it is reasonable to believe that we shall find particular forms of disease in particular localities; and probably racial peculiarities will also be influential in determining the character of disease. As the population of our cities increases, as a result of poverty and defective hygiene, deformed pelves will become more frequent, and therefore the capital operations of obstet-

rics shall be oftener necessary; for similar reasons we may anticipate more surgery of gynecology.

It has been said that, as civilization progresses, the tendency of all human diseases has been to assume the neurotic type, and also that diseases become more complex in their manifestations. On the other hand, the recent advances in antisepsis allow the hope that some day we may eradicate the septic diseases of childbed, and our grand improvements in surgery shall qualify us to cope successfully with what a few years ago would have been considered a helpless and hopeless condition.

Dr. E. M. Moore recently said: "It is difficult at the present moment to define the possibilities of modern surgery. It is a fit representative of the time we live in, a combination of science and action." Accepting that as expressive of our present status, I shall add, and as in other departments of applied science almost every day brings a new surprise, so we may confidently anticipate advances and successes which shall as far surpass our present attainments as these do those of the past generation. And happy may we count ourselves that this Association, so auspiciously established, shall contribute to these magnificent and beneficent attainments.

DRAINAGE IN ABDOMINAL SURGERY.

By JOSEPH PRICE, M.D.,
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In times past the subject of "Drainage" in abdominal surgery has been a moot question, and at present is still under discussion. There are those who ardently advocate it,—there are those who in great part reject it,—there are those who, Laodicean-like, are lukewarm concerning it, and finally, some who, without convictions, either for or against it, use it or dispense with it, as chance or whim, not logic, may determine. It will be the object of this paper to offer positive convictions on the matter, arrived at theoretically and practically.

Among the working men of the profession it is that are found the antipodes of opinions concerning this question. Herein lies the importance of arriving, as nearly as may be, at positive, nay, even dogmatic expression and adoption of settled methods and rules of procedure concerning it,—such, for instance, as are laid down and adopted in trephining, herniotomy, amputations, and the like. This would not be true if the discussion were restricted to theorists without experience, with zeal but without knowledge. Theory, or preconceived opinion, in surgery, no more determines a question than did ancient geography correctly map the world.

Illustrative of the diversity of opinion concerning the use of drainage, we have the following: Says one operator, "I do not apply drainage in ordinary cases of ovariotomy," etc.; says another, "So confident am I as to the value of the drainage-tube, and so little afraid of injurious results, that I use it on the slightest excuse." Parallax so great must have as its cause widely separated points of view. If one operator has uninterrupted success with the use of the drainage-tube, and another, from his experience, distrusts it, there must be a common point of view from which to arrive at conclusions concerning this divergence of results. It will not suffice to say it is

not used in ordinary cases, nor "in most cases with adhesions, owing to the absorbent power of the peritoneum" to remove secretions. Before such opinion will stand, it is necessary to determine and to agree upon a definition of "ordinary" cases, and to decide in how many cases the peritoneum will refuse to rid its cavity of the exuded fluids from broken-up adhesions.

If the tube has no injurious effects, it is better to use it in every case than to risk non-absorption in a single case, which may have been thought to be "ordinary," but which has turned out the reverse.

Here it will be seen the question resolves itself into one of logic, not predilection. First—Is there a danger from the retention of fluids in the peritoneal cavity? Second—Is the use of the drainage-tube a safe means of obviating these dangers? If the tube involves in its use an element of danger, what are the comparative dangers from its employment or its omission?

That the peritoneum will in many cases relieve itself of exuded fluids goes without question. Experience has also shown that when it refuses to do so unaided, the free use of salines often assists it, and cuts short an attack of acute peritonitis. Experience also shows that this mode of treatment often fails, necessitating the re-opening of the abdomen, thorough irrigation, and the secondary use of a drainage-tube, even though no pus has been discovered on the reopening.

The fallacy in supposing an operation simple because no great adhesions have been involved, lies in the fact that great secretion can arise from small adhesion, and that blood exudation, which seems nothing at the close of the operation, may, when the patient rallies from the shock of ether and the operation, become very considerable. A case illustrative of this last danger has lately come under the writer's notice. The adhesions were very dense, but not extensive. At the close of the operation the blood exudation was almost *nil*. A tube was, however, introduced. The wisdom of so doing became evident as time progressed, inasmuch as for ten days there was free exudation of blood, such as never could have been absorbed by the peritoneum.

A second fallacy occurs in determining the so-called "simple" cases. Operation discloses an inflammatory condition of the tubes and ovaries. There are very slight adhesions or none. The dis-

eased structures are ligated and removed, and the abdomen closed. No drainage is used. Peritonitis sets in. If recognized in time, reopening, irrigation, and drainage may save the patient. Recriminating himself, the operator reviews each step of the operation, and sees no loophole for infection. He has looked on the wrong side for the infection. No one at an operation can decide whether an inflammation is simple, purulent, or infectious and specific. In many cases apparently simple I believe peritonitis arises from such cause, and herein appears a still further justification of the cautery, which Keith so much prefers. A touch of the cautery on a doubtful tube, in many cases, decides between slow recovery from peritonitis and a rapid convalescence without a bad symptom.

The same favorable result often follows simple drainage, which removes the pabulum of infection.

In cases of severe hemorrhage, or vast adhesion, the use of the drainage-tube is not questioned, so I pass on to another consideration of the matter.

Does the use of the tube involve a question of danger? It is held by those who oppose the tube, and by those who are dubious concerning its use, that infection may follow its introduction. My answer is, were half the care used to keep it carefully cleansed, and to protect it from external interference, that characterizes the Gatling-gun warfare against germs supposed to enter through it, there would be little cause to fear it. Keep the tube clean, empty it often, remove it by degrees, commencing as soon as the discharge seems to be at a minimum, and in most cases no more irritation will be caused by it, or with it, than some inadvertence will explain. When an entire pelvis can be packed with lint to subdue hemorrhage, is it possible that a simple glass tube can cause such trouble as is frequently attributed to it? The involvement of the peritoneum in the perforations of the Bantock tube, has been used as an argument against this excellent means of applying drainage.

This fear has some foundation in fact. I believe, however, that the danger referred to may be obviated by a careful packing of the tube, or, more exactly, by carefully introducing the cotton dry, as tightly as possible, then when it becomes wet, it of itself will fill the perforations, thus eliminating the danger of omental involvement. I have never had this condition in my own work, although it has come under my observation. As to the use of the tube, my own

experience teaches me that when kept clean, by frequently changing the cotton, and with careful attention to that part of the incision through which it is introduced, there is not the slightest danger of septic infection from its use. This conclusion is reached after its application in extreme cases of pelvic adhesion, extra-uterine pregnancy, hysterectomy, pus tubes, and (so-called) simple operations. I have never had a single fatal case in which I could justly attribute the result to the use of the tube. On the contrary, I have seen more than one case in which its absence has been followed by mischief which was relieved by its introduction. I have seen cases, too, in which I believe failure was due to its omission. This latter belief may be prejudice, but the advantages I have observed and experienced as a sequence to its use do not admit of doubt or question in my own mind.

Concomitant with the question of drainage comes its adjunct, irrigation. This procedure is not opposed even by those who oppose simple drainage, they not seeming to fear it in any way. I, myself, believe it of the greatest possible use to insure complete removal of *débris*, clots, and shreds. Pouring the water into the abdominal incision I do not consider so efficacious as its introduction by the "Alpha" constant-current syringe. I am in the habit of introducing the nozzle of the syringe into the lower angle of the incision, while with two fingers of the other I retract the intestines, thus giving free exit to the current. In this way the entire abdominal cavity can be thoroughly drenched. As to the method of drainage suggested by Professor Martin, *i.e.*, through the vagina, I cannot understand either its philosophy or its advantage. To close the abdominal cavity in the ventral incision, in order to find reason to enter it through the vagina, seems to me little more logical than to endeavor to escape miasm by closing the pipe of a stationary washstand and follow with tapping the sewer with which it communicates. If drainage be decided upon, the site of the incision, as already indicated, offers all that can be desired. As to the use of solutions, that has had its day, and hardly deserves mention. I speak of it now simply to call attention to the mischief it has caused in the past, and to express the belief that much of the intestinal pain frequently met in cases operated upon a few years ago, was due to adhesions resulting from the use of solutions, especially carbolic acid. Less than six weeks ago I assisted in such an

operation, the adhesions being simply universal throughout the entire length of the great intestine. I surmised that carbolic irrigation had been used at a previous operation (this was her third), and was afterward informed by the operator that I was correct in the opinion expressed.

As to the time for the removal of the tube, nothing should influence this more than the nature and quantity of the discharge. When this is clear, and sweet, and scant, the indications are for removal. It has been held that the introduction of the tube delays union, and increases the danger of ventral hernia. This I am not inclined to believe. Ventral hernia, I believe, in most cases, results from two causes. First, a very long incision; and second, getting up too soon and abandoning the abdominal bandage too early. A short incision, and due care to keep the patient in bed a sufficient time, together with abdominal support through a period of months, will, in most cases, obviate this *bête noir* of abdominal surgery.

I have thus briefly set forth my ideas of the use of the drainage-tube, which, epitomized, may be stated as a surgical procedure, which, without danger, eliminates to a great extent the danger of abdominal surgery, infection through the peritoneum. I believe the dangers referred to in connection with the tube are chiefly theoretical, and for the most part imaginary, and where they are real, that they can be obviated and minimized to an extent which renders them of trivial importance compared with the risk that is run with the omission or infrequent use of the tube in pelvic surgery. My own practice is in harmony with this belief, and my results with the tube justify the faith I place in its utility.

Any omission of essential points, I trust, will be referred to in a discussion of this paper. My intention has not been to exhaust the subject, but only to bring forward its strongest points as they appear to me.

A CONTRIBUTION TO THE STUDY OF PELVIC ABSCESS.

By CLINTON CUSHING, M.D.,
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It is with some hesitation that I venture to discuss a subject which is doubtless familiar to all the members of this Association; nevertheless, it is one of great practical importance, and one that enters into the daily experience, more or less, of every busy man who has much to do with the treatment of diseases peculiar to women.

The proportion of women who, at some time in their lives, have suffered from a pelvic abscess is quite large. I am not aware that any statistics have been published by which we can judge accurately of the relative number of cases, but it is sufficiently great to warrant a chapter on this subject in most of the leading works on gynecology.

For the purpose of this paper we will define a pelvic abscess to be any collection of pus in the cavity of the pelvis which exists in the tissues outside the cavities of the hollow organs, such as the bladder, the uterus, the Fallopian tubes, and the rectum. When it is remembered that pelvic abscess is extremely rare in men, except as a consequence of direct violence, and that it is a very common affection in women, we are forced to the conclusion that the frequency of the disease in the female sex is due to the peculiar conformation and function of the pelvic organs, and this peculiarity is characterized by the functions of ovulation and menstruation; and, furthermore, by the fact that we have communication between the peritoneal cavity and the outside of the body by a direct canal.

During the past few years I have published three series of cases of pelvic abscess which illustrate most of the causes which ordinarily produce this disease. Among them are cellulitis, caused by pyemic

infection from amputation of the cervix, from a deposit of tubercle, by disease of the vermiform appendix, from a hematocele, pelvic peritonitis, pyosalpinx, and disease of the pelvic bones. Of these causes, none has proved so important and frequent as pyosalpinx.

The growth of our knowledge in later years regarding the diseases of the Fallopian tubes, and the somewhat extended experience in the observation and treatment of pelvic diseases, have led me to indorse, in the main, the views of Mr. Lawson Tait regarding the frequency of the existence of salpingitis and pyosalpinx, and while it is doubtless true that the various causes already mentioned furnish us with a considerable proportion of examples of pelvic abscess, I have no doubt that a large proportion of recurrent pelvic inflammation, terminating in the formation of pus, is due to infection of the affected part by irritating secretion from disease of the Fallopian tubes.

It is only within the past few years that we have been made aware of the frequency of tubal disease by the numerous laparatomies and the many post-mortems undertaken with the object of ascertaining definitely the causes of the serious symptoms, or of the death of the patient. Bandl states that in the examination of one hundred uteri he found catarrhal disease of the tubes in over half the cases. At the present day all are aware of the frequency among all classes and conditions of women of a chronic inflammation of the mucous membrane that lines the cervix and body of the uterus, and it is but fair to suppose that, as the uterine end of the Fallopian tube is continuous with the endometrium, by continuity the mucous membrane of the Fallopian tubes is also in a state of catarrhal inflammation, and that this condition constituting the predisposing cause, it only requires some untoward circumstance, such as the introduction of a uterine sound, the congestion which attends menstruation, unusual exercise, or the sexual act, to cause the expulsion of muco-purulent matter from the tube directly into the peritoneal cavity; and we here have the explanation of the unlooked-for attacks of pelvic inflammation which not infrequently follow a most careful examination of the cavity of the uterus, this examination occurring at the hands of a skilful and experienced gynecologist, in spite of every precaution being taken to avoid such an unfortunate accident.

I am more and more convinced each year of the statement made

by Noeggerath, that an uncured gonorrhea in the male is a very frequent cause of salpingitis, a recent case coming under my observation in which this theory was verified in every particular.

A woman, twenty-seven years old, who had been seduced five years before, since which time she had been a servant in the family of a physician and had led, so far as could be ascertained, a moral life, had suffered during this entire time from chronic pelvic disease, resulting in repeated attacks of pelvic inflammation, incapacitating her at times from attending to her duties. Two months before I saw her she had married; immediately following the marriage all her symptoms became very much aggravated, and the husband contracted a severe urethritis which resulted in a perineal abscess. The woman's condition became so serious that I was asked by her physician to see her. I diagnosticated pyosalpinx with a probable pelvic abscess. I opened the abdomen and found the right Fallopian tube distended with pus, and at its outer extremity a pelvic abscess containing several ounces. I removed both tubes and ovaries, and now, upon an examination by a competent microscopist, gonococci were found in both Fallopian tubes, intermingled with the pus. The secretion from the urethra of the husband was therefore examined and the gonococci demonstrated without difficulty. Here, then, was a case where it would appear that the woman had been infected with the gonorrhea five years before; that the specific character of the disease had remained in the Fallopian tubes, where it had caused repeated attacks of pelvic inflammation; that the husband had contracted the disease of the woman; that the sexual relations had aggravated the already existing disease of the woman, resulting in the formation of the pelvic abscess which necessitated the operation. The patient recovered without a bad symptom, and was able to attend to her duties in thirty days.

The pus cavity may consist of the distended Fallopian tube constituting pyosalpinx; it may be situated anywhere in the pelvic excavation, in the ovary, or in the peritoneal cavity at its lower part, bounded above by the small intestines agglutinated by lymph, a remarkable example of which came under my observation four years ago.

A girl, eighteen years of age, was suffering from some serious abdominal disease which I diagnosticated as pelvic abscess. I opened the abdomen in the linea alba, and it was now found that that portion of the abdominal cavity below the umbilicus was an immense sac of pus, the upper wall of which was composed of the small intestines and mesentery, agglutinated together by lymph. The uterus was crowded backward and downward against the rectum; the ovary and Fallopian tubes were buried in a mass of lymph; the cavity contained at least a gallon of pus. A counter opening was made through Douglas's pouch, and a rubber drainage-tube drawn through from the abdominal opening into the vagina. On the second day the bladder wall sloughed and all the urine escaped into the pus cavity. This necessi-

tated the formation of an artificial vesico-vaginal fistula, that the urine might drain away from below, in order to allow the pus cavity to heal. At the end of a year the abscess cavity had healed, the abdominal wound had closed, and having now repaired the vesico-vaginal fistula, the patient was restored to a perfect state of health.

Some cases have recently been reported by Martin, of Berlin, in which the collection of pus was situated in a deposit of lymph among the intestines which overlie the pelvic excavation. I have seen one case of this character. I have found that the most common point of exit of a pelvic abscess is into the rectum, next into the vagina, then through the abdominal wall, into the bladder, through the perineum, sometimes through the Fallopian tube into the uterus, into the peritoneal cavity in the order named, and occasionally, but very rarely, through the sacro-sciatic notch. An illustrative case, in which the exit of the pus was through the sacro-sciatic notch, occurred in the wife of a physician in this city under my care about three years ago. She was confined of her first child on July 1st; at the end of three days puerperal fever developed, which was treated by her physician in the usual manner with quinine and opium. The case went steadily on from bad to worse, and when I first saw her, on July 20th, her state was most deplorable; the temperature varied from 100° to 104°; the abdomen was moderately distended, and the right hip and thigh were enormously enlarged. There was not sufficient pain at this time to require opiates. In consultation with the physician in charge I advocated the free use of the aspirator to determine, if possible, whether there existed any collection of pus. This was opposed on the ground that the woman's condition did not warrant such procedure. On the third day thereafter, however, an aspirating needle was introduced just above the trochanter on the outer surface of the thigh, and, at a depth of an inch and a half, a pus sac was discovered; a free incision was now made, followed by the introduction of the finger, when it was found that the fascia lata was the outer covering of an immense pus cavity, and that the end of the finger could be passed down behind the trochanter major to the sides of the pelvis. It was very clearly made out that the channel extending from the pus cavity into the pelvic excavation, or, in other words, that the pelvic abscess, had bored through the sacro-sciatic notch into the tissues about the hip-joint. I now divided the tissues along the crest of the ilieum, and then with two fingers

pushed off the peritoneum from the iliac fossa, passed my fingers down into the pelvic cavity, and found that the periosteum had disappeared from the inner side of the ramus of the ischium—that there was, in fact, a condition of caries. A drainage-tube was introduced through the roof of the vagina, up through the abdominal opening, and the parts thoroughly washed out. The temperature immediately dropped to normal and the prospects were very good for recovery; but the woman gradually sank, and died of exhaustion on the third day. Had this treatment been carried out earlier in the case, I doubt not that she would have recovered.

The diagnosis is sufficiently easy in many cases, but in others only the aspirator or abdominal section can make clear the facts. Certain symptoms have been set down as proof of the existence of pus, notably, persistent high temperature, chills, and night-sweats; and, as a rule, these symptoms, or some of them, are present, and are a reliable guide for opinion and practice. But I saw a physician's wife two months ago who was steadily failing in health and becoming much emaciated, having lost forty pounds in weight in the past five months, succeeding an attack of pelvic inflammation, which left masses of organized lymph about the uterus. There was great tenderness on pressure, but no signs of fluctuation, no increased temperature, and no rigors or night-sweats. I advised abdominal section, but was opposed by both physician and patient, and therefore, as a compromise, used the aspirating needle through the roof of the vagina; to the right of the uterus at a depth of two inches I found an abscess of small size, which was probably a Fallopian tube, containing thick, cheesy pus. The dilating trocar was used, and through the opening made a self-retaining drainage-tube was inserted, and at this writing the discharge has nearly ceased and the local and general symptoms much improved. I think there can be no doubt that a collection of pus may occur in the pelvis, may become encysted, the fluid portion gradually absorbed, and a cheesy mass be left behind which may remain in *statu quo* for years, unless unfavorable general conditions, or local injuries, or irritations set in action new inflammatory processes, in which event you have the predisposing cause for the formation of an acute pelvic abscess. If the abscess be not due to the existence of tubercle or cancer, and if blood-poisoning is not present, under proper treatment the prognosis is good.

At the present day our methods have become so certain and direct that, given a case which still retains a fair share of vitality, the evacuation of the pus and the keeping of the parts afterward in a cleanly condition will insure a recovery.

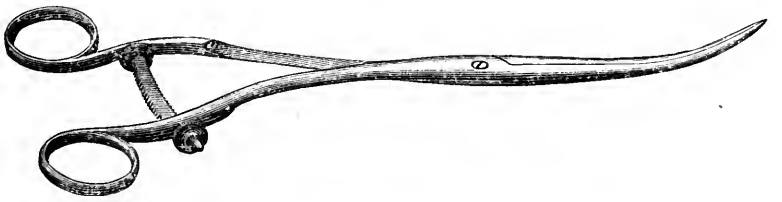
The differential diagnosis, when made from a digital examination of the rectum or of the vagina, is often attended with great difficulty. A pelvic hematocele or an extra-uterine pregnancy may simulate a pelvic abscess. In the case of a hematocele the sudden appearance of the tumor, the absence of the firm organized lymph, and the absence of high temperature, should be sufficient to arouse our suspicions of the existence of a blood-clot. In extra-uterine pregnancy the previous history, the absence of menstruation, the enlargement of the breasts, the absence of high temperature, nausea, and non-fixation of the uterus would be sufficient evidence on which to base an opinion; but in any case in which the health is seriously imperilled or life in danger, we are justified either with an aspirator through the roof of the vagina or by abdominal section, to determine positively the nature of the disease with which we have to deal.

In the treatment of a pelvic abscess, and I would include as well, because the two diseases are so often associated, pyosalpinx, the rule should be invariably that when it is manifest that we have to deal with an accumulation of pus which causes decided constitutional disturbance and local pain, the surgeon should use artificial means to evacuate the collection in the speediest and safest manner. When it is evident, from the repeatedly recurring attacks of pelvic inflammation coming on without any apparent cause, that pyosalpinx exists, abdominal section is without doubt the best method of treatment; it enables the surgeon to go clearly into the merits of the case, and to remove such diseased structures as may be needful to produce a radical cure. If, on the other hand, as a consequence of a hematocele or a cellulitis, we have a collection of pus in which fluctuation can be made out from the vagina by digital examination, the puncture can be made through the vagina and the pus cavity drained by a method which, in my hands, has proven very satisfactory.

About six years ago I had under my care a case of pelvic abscess which gave me great anxiety. A collection of pus existed behind the uterus which produced constitutional symptoms of so grave a nature that I feared for the life of my patient. Being satisfied of

the existence of the abscess, I made a puncture directly behind the cervix into Douglas's pouch and evacuated about three ounces of bad smelling pus. The hemorrhage from this incision was so extremely profuse that I was finally compelled to plug the opening with cotton which had been saturated with Monsel's solution; this of course, for the time being, put a stop to any further escape of pus from the abscess; however, no further bleeding occurred, and the abscess was nearly well, when again severe symptoms developed; increased thickening took place in the left ligament, and again severe constitutional symptoms supervened. It now became evident that I had to deal with a collection of pus in the left broad ligament, directly in the line of the uterine artery and the ureter. Upon using the aspirator the abscess was easily found at a depth of about one inch from the vagina, but I did not dare to use a knife to enlarge the opening on account of the near proximity to the uterine artery and the ureter. I now had constructed what I term a dilating trocar—an instrument that I herewith present for the inspection of the Association.

FIG. 1.



Dilating trocar closed.

FIG. 2.

Dilating trocar open.

As will be seen, it is similar to a uterine dilator but with a trocar point. This instrument I forced along the track made by the aspirating needle, and then, by closing the handles, the points were separated and the tissues were torn in such a way as to leave an opening sufficiently large for the drainage-tube to be introduced easily, the operation being attended with a minimum amount of risk

to the uterine artery and the ureter. Since that time I have treated many cases of pelvic abscess in this manner, and when they were not complicated with pyosalpinx the results have been all that could be desired.

The self-retaining drainage-tube, as will be seen from the sample, is of a T-shape, and is easily made in a moment from a piece of rubber tubing of a suitable size. The cross-section should be sewed in place with a needle and a strand of heavy waxed silk. It is introduced by pressing the ends of the cross-section down by the side of the tube and holding it there in the grasp of a pair of forceps; the tube is now carried into the position intended, and by liberating the forceps the ends of the cross section-spring out and make the tube self-retaining. To remove the tube it is only necessary to make a moderately strong traction, when the short ends fold upward and the tube is easily drawn out.

Fig. 3.

Self-retaining drainage-tube.

There are a few points in this connection worthy of consideration: in the first place, the tube should not be removed until the discharge from the abscess has practically ceased, in order that we may avoid a too early closure of the opening and hence, a reäccumulation of the pus. In the introduction of the aspirating needle or the trocar, a careful digital examination will enable us to avoid arteries of any considerable size near the vagina, as their pulsation can be made out. In introducing the aspirating needle, the trocar, or the drainage-tube, the speculum is unnecessary; on the contrary, the sense of touch will locate more surely the proper point for the introduction of the needle or trocar than would the sense of sight.

After the evacuation of the pus, if the temperature does not become normal, an injection of hydronaphthol in water can be used once in five or six hours. A point of great interest now arises regarding the question whether we have to deal with a case of pyosalpinx pure and simple, or whether we have a collection of pus outside of the Fallopian tube and a case of pyosalpinx as well.

The method of procedure in the treating of the case will depend very much upon our ability to make this differential diagnosis; for if we have a collection of pus in Douglas's pouch and in the connective tissues of the pelvis, consequent upon some local inflammation and independent of any disease of the tubes, the opening of the abscess from below through the roof of the vagina and the introduction of the drainage-tube is without doubt the safest and best method of procedure. If pyosalpinx exists, a tapping of the abscess through the roof of the vagina or even the tubes themselves, with an aspirator, and the subsequent introduction of a drainage-tube through an opening made with a knife or with the dilating trocar, will not result in a cure.

The history of the case rather than the information gained from a digital examination, will be our safest guide in cases of doubt. If it can be shown that there has been a series of attacks of pelvic abscess, coming on without apparent cause, and especially if a pelvic abscess has existed before, the chances are all in favor of the case being one of pyosalpinx, in which event the proper treatment is to open the abdomen and remove the diseased tubes; and I think that it may be set down as a rule that if a pelvic abscess, that is not tubercular, is opened in the manner already described and completely drained and it then fails to heal, the probabilities are that we are dealing with pyosalpinx, and the opening of the abdomen will in the end become a necessity to effect a radical cure.

In several instances I have found the best plan of treatment of be, after opening the abdomen, to make a puncture through the root of the vagina with a dilating trocar and insert a self-retaining drainage-tube, and with the hand in the abdominal cavity control and govern the direction and depth of the opening made through the roof of the vagina. When the small intestines are agglutinated with masses of lymph, in the centre of which exists a collection of pus, the advantage of the dilating trocar over the knife is self-evident; the risk of hemorrhage is much decreased, the torn tissues do not so readily reunite, and drainage is thus more certainly secured.

I would commend to the notice of the members of the Association the dilating trocar, for it has proven in my hands a most satisfactory instrument, and has enabled me in many cases to give speedy relief

where, without it, procrastination would have been necessary and much valuable time lost. I would urge also the free use of the aspirating needle in all cases of obscure pelvic disease in which the local or constitutional symptoms would indicate the presence of pus; I use it constantly in such cases and never in an instance has its use been followed by bad results.

DISCUSSION ON THE PAPERS OF DRS. PRICE AND CUSHING.

Dr. W. W. Potter, of Buffalo, New York.—The papers of Drs. Price and Cushing, just read, present an opportunity for discussion of the whole subject connected with drainage after operations in the abdominal and pelvic cavities, which I doubt not the Fellows of this Association will avail themselves of in an ample manner.

It is not, however, my purpose to enter into the question abstractedly, but I arise simply to introduce to the notice of the Fellows a drainage-tube that I think is, possibly, of even greater advantage than the one Dr. Cushing has presented.

The one I now show you (see Fig. 4) is made from pure soft rubber, after a model that I devised. Its retaining collar is continuous with the shaft—is a part of the tube itself—and will keep its lumen

Fig. 4.

open. It can be introduced in the same manner as Dr. Cushing's, and can be obtained of the manufacturers, Messrs. George Tiemann & Co., New York, in any size desired.

Dr. E. E. Montgomery, of Philadelphia.—The members of the Association are greatly indebted to Drs. Price and Cushing for their practical papers on a subject of the greatest importance to those practising abdominal surgery. In the practice of this department, we are desirous of using no measures unnecessarily, and, on the other hand, of leaving undone nothing that is important for the relief and for the security of our patients. With this in view, it is exceedingly

important that practical indications should be laid down for the treatment of such cases, to make sure the class of cases in which drainage is indicated and necessary, and to outline those in which it is not indicated. I am rather disappointed in the paper of Dr. Price in this respect. In one remark he leads us to believe he would use drainage in all cases, or nearly all cases. Where we have pyosalpinx, the tube being filled with pus, and there are extensive adhesions, drainage would be a positive indication. In many of these cases we find diseased conditions of the tube, and it is important that the whole tube should be removed. Where a portion of the tube still remains it may be a seat of subsequent inflammation and danger to the patient. There are many cases in which the adhesions are but slight, but the subsequent effusion into the peritoneal cavity is great. This depends largely upon the condition of the patient; whether the eliminative powers are good. If the patient is suffering from renal insufficiency, or the action of the bowels is insufficient to throw off the peritoneal secretion, this will accumulate in large quantities. In many cases the necessity of drainage may be obviated by the subsequent care of the patient. If we place the patient on restricted diet, or diminish the amount of liquid so that the pressure in the vessels will be decreased, and the vessels instead of throwing out liquid will take it up, there will be less danger of peritoneal effusion. In the application of the dressings, where we have reason to expect peritoneal effusion, if we apply pressure, we will find the danger of effusion is lessened. I am pleased with one particular the doctor dwelt upon—the importance of having a small tube. The introduction of the tube must lessen to some degree the strength of the ventral union, and the danger of subsequent ventral hernia will be increased. Another important thing is the care of the drainage-tube, so that the secretions are not allowed to decompose in the peritoneal cavity. By the application in the drainage-tube of iodoform gauze, and having the nurse remove this at least every two hours, we will find the danger of decomposition greatly decreased. By applying around the drainage-tube a rubber dam, a piece of rubber such as is used by dentists, making with it a complete covering over the drainage-tube, we can wash out the cavity without soiling the dressings at all. The drainage-tube is objectionable where it is unnecessary, for the reason that it lessens the strength of the union in the wound. It is also objectionable, for the reason that it increases the difficulty of keeping the cavity pure and sweet. There are cases in which vaginal drainage is preferable to the drainage above. In cases in which the adhesions are extensive, particularly where the sac dips down deep into the pelvic cavity, as in extra-uterine pregnancy where

rupture has taken place, it is difficult to dissect out such a sac and remove it completely; passing a drainage-tube from the vagina into the sac, shutting out the peritoneal cavity, we have drainage from the vagina and the peritoneal cavity protected. If drainage is necessary for a considerable time it is important that the drainage be in the position of least discomfort to the patient. For this reason, and in this class of cases, vaginal drainage is preferable to the abdominal method.

Dr. Henry O. Marcy, of Boston.—The subject opened by Dr. Price and those who followed is a large one, and cannot be satisfactorily discussed in a short time. There are two or three points in which I would draw exceptions in the matter of detail to the gentleman who read the first paper. In the theorizing, in reference to drainage, we certainly all understand that we desire to get rid of deleterious, effete, poisonous material. The first question the operator places before himself is, Does he do it by operative measures? If he is sure he does, it is a gratuity to add the danger of the introduction of a tube, which itself may carry in infection. If infection is removed, we have nothing to drain, because we have a healthy, non-infective cavity. The question comes, Can we do this? If we are in doubt, Can drainage accomplish that which we desire? Unfortunately, we all have to answer, that many times it signally fails when we have trusted to it. The day of question of antiseptics has passed in this Association. If we have removed an infectious Fallopian tube, we should destroy the point of infection before we close the wound. There is nothing better than to be certain that you follow back the infection to its very centre. If you have a doubt about the aseptic properties of the cavity, wash it freely with antiseptic solutions. If this is thoroughly done, it takes away the great source of danger, for which you desire a drainage-tube; if you have not removed this, the next question you ask is, Does the drainage-tube make your patient safer? The drainage-tube often fails. I have seen it, over and over again, where the tube is filled with a plastic mass. Then you have irrevocably shut in your infectious material, and your only safety to your patient is a reopening of the cavity. Your only safe way is in following the infection to its origin. I am pleased to say I have not had a septic laparatomy for over two years. If I had, I might use the drainage-tube. Some of the gentlemen have spoken of adhesions and lacerations. I am sure they would agree that they are of very secondary importance, if we put the factor of hemorrhage out of the account. If we have to use drainage we should drain with gravity, and not against it; that is what drainage means, if I understand it. I am strongly inclined to think favorably of vaginal drainage on this account. I would like the privilege of showing in the

afternoon a drainage-tube which I have devised—two tubes lying in conjunction with a diaphragm. By this means a cavity can be washed out with a double current. I will also bring with me two or three other instruments of simple contrivance and practical utility.

Dr Hampton E. Hill, of Saco, Maine.—In connection with the subject of drainage, I wish to speak of a method that has served me well. I have used it in a few cases in which the abscesses were readily accessible through the vaginal wall. I take a long, ordinary trocar, and, after carrying it into the abscess cavity and removing the blade, I pass through the canula a soft gum catheter, leaving it in as a drainage-tube. In the few cases in which I have used it, it has answered a very good practical purpose.

Dr. A. Lapthorn Smith, of Montreal.—I think Dr. Marcy hit the nail on the head when he said we should try to drain with gravity, not against it. I have myself over and over again, seen cases in which the drainage-tube was in, and in which there was hectic fever, and when an opening was made through the vagina the fever went away. If you wish to use the abdominal tube, put the patient on her face. If you wish her on her back, use retro-vaginal drainage.

Dr. Augustus P. Clarke, of Cambridge, Mass.—I wish to speak of primary operations, where antiseptic measures are strictly carried out. In those there is no necessity for a drainage-tube. It seems to me that where there was so much drainage it is rather a confession of a want of thorough antisepsis.

Dr. Albert Vander Veer, of Albany, New York.—I think there will be scarcely presented at this meeting any subject of as much importance as this of drainage after operations in the abdominal and pelvic cavities. The papers presented by Drs. Price and Cushing have covered the ground so thoroughly, that I will take the time of the Association but a moment.

I desire to refer with pleasure to one man in this country, one working in the direction of drainage in pelvic abcess; and had he lived he would undoubtedly have carried the subject much further along, and to a greater degree of perfection, than has been done since his death. I refer to the late Dr. E. R. Peaslee. I was at one time associated with him in a number of his cases. At the time, I remember, his percentage of recoveries was greater than that of any other operator. His theory was to drain in the direction most natural for the fluid to flow—*i. e.*, with gravity. I may say, however, for myself, that I have been fortunate of late in not having to use the drainage-tube often.

In introducing the drainage-tube in the lower end of the abdominal wound, it is well to introduce the lowest suture in such a way that it

can be tightened as soon as the tube is removed. I can only call to mind two cases in seventy in which hernia has occurred after my abdominal section. One happened because the patient got up too soon, as I believe.

In closing up the wound, the cardinal principle is to bring peritoneum in connection with peritoneum, fascia with fascia, skin with skin. They must all be brought together carefully. We must select, according to our cases, the form of drainage we desire to make use of.

Dr. Joseph Price, of Philadelphia.—I thank you very much for your kind remarks, and for the much that has been said on the subject of drainage. I have always been an earnest follower of the most successful men. I will first call attention to something said by Dr. Montgomery. Perhaps I had better have been fuller. I meant simply to discuss actual disease. I was not dealing in my paper with simple cases, but actual disease. The questions alluded to by Dr. Marcy are of vital importance.

I have studied most carefully the work of Drs. Martin, Tait, and others, and have boiled down their tables most carefully. When I consider a mortality of twelve in seventy-two for pelvic surgery, I must say that I do think that Dr. Martin needs a little further experience in pelvic drainage. If you refer to Bantock and compare his mortality record in hysterectomy, I think you will consider that it is wise to practise the drainage of Bantock, of Tait, and of Keith, and not that of Martin. Tait said long ago that he looked upon hysterectomy as a murderous operation. Surely he will consider it as done by Martin with a mortality of ten or twelve per cent. as still a murderous operation; but Mr. Tait's results are very gratifying at present; a long run of successful cases. Dr. Marcy and Dr. Vander Veer forgot that the character of their cases has changed in the last few years. Both are men of large experience and have taught those who send them cases to send them early. They have educated the profession to recognize the importance of early operation. In simple ovariotomy no one surely thinks of drainage; but a neglected case, one that hangs around three or four years, they would both drain. I have some neglected cases that I do not care whether I operate on or not. I hope to give one of them to Sir Spencer Wells.

The discussion has been full of surgical wisdom. The paper from California was surely worth carrying across the continent. I regret the absence of this good man. I would like very much to know him.

I long since called attention to operations upon the cervix as being a common cause of tubal disease or pelvic inflammatory troubles. I wish to call attention to that point, and an observation in my own

experience: that some of the means of making a highway into the uterus are a common cause of pelvic inflammatory disease. I have recently removed the tubes in two such cases. You may say that the disease preëxisted; but if so, that was a contraindication to the operation of closure of the cervix. It was said that Emmet had gone back on his operation; but he simply uttered words of caution in regard to the operation.

You can pick out hernias from a class of operators who make long incisions. Thomas urged the importance of introducing the whole hand. Two fingers are quite sufficient. You can do anything in the pelvis with two fingers that you can do with the whole hand.

To remove the intestines has recently been recommended. You might just as well remove the spleen and liver. You are dealing with masses you must enucleate with one or two fingers—making a clean enucleation at any cost. Hemorrhage is, in these cases, a common source of death—not peritonitis. Many of the cases die in twelve or twenty-four hours. The death is certainly due to shock or hemorrhage, not to peritonitis.

The capillary drain I do not look upon as of much importance. It is very nice, but the frequency of cleaning the tube is of paramount importance. You cannot get along without a nurse who has had special training. In the morning and evening clean the tube yourself, if you choose. The iodoform gauze or capillary drain, recommended by Dr. Montgomery, is very excellent.

A man has no right to leave the abdomen with the intestines matted together; they should be completely separated. In regard to the aspirator, I used it some few years ago; now I have no need for it. In those intra-ligamentous cysts see that there is no trouble independent of it in the ovary or tube. Keith did nine hysterectomies, because he failed to remove the tubes. Those cheesy masses—there remains about as much cheesy *débris* on the intestines and other parts as on the masses you have removed. A clean irrigation, and sometimes a soft sponge on a sponge-holder, will wipe away a good deal of the *débris*. In reply to Dr. Marcy and the gentleman who spoke about Dr. Martin's work, I would say it is a very easy matter to keep the tube clean, sweet, and dry. I would allude to my own work: if to-morrow I did an abdominal section for pelvic disease, diseased tubes, and ovaries, and I left the matter to the nurse; if I asked the question of the nurse: Nurse, do you want a drainage-tube or not? she would say, "Yes," so well do the patients behave, and so speedily do they get well. I would call attention to eighty-four cases done in alleys and courts, without carbolic acid or bichloride of mercury, with one

death in eighty-four. I simply challenge the world to beat it. Those nurses were all trained, and directed to clean those tubes. Our visits were very frequent.

I have had no experience with vaginal drainage. The other has served me well. Some one spoke of the rule that applied to bad cases; of course, he means actual disease. The tube is a little sentinel. If he has hemorrhage, he goes back and does the work over.

About exploratory incision; much has been said about making a diagnosis by it. I feel I have no criticism to make. All I have to say in regard to that is, I think the man that mentioned it simply meant that he had a clear indication that he recognized a lesion, that he was going in to do something, and that he did do something.

Drain, Dr. Montgomery said, and be on the safe side—that is, certainly, deep surgical wisdom. I do not approve of drainage in all cases. My operations were all done for actual disease, and drainage is used in about 45 per cent.

Subsequent care: Dr. Montgomery covered that point. Dr. Montgomery used salines; so does Tait. We all know that Tait minimizes every risk in abdominal surgery. He has less disturbance than we, as anæsthesia and operation are shorter. He can use the stomach earlier than we can for salines. He has less nausea, and hence can use salines.

Dr. Montgomery called attention to the bandage—that is an old principle, rest, position, pressure.

You have all called attention to reopening. Any one that will reopen an abdomen, recognizing hemorrhage, deserves a great deal of credit, and will often save the life of a patient; but his work should have been well done at first, this would bar the necessity of doing it over.

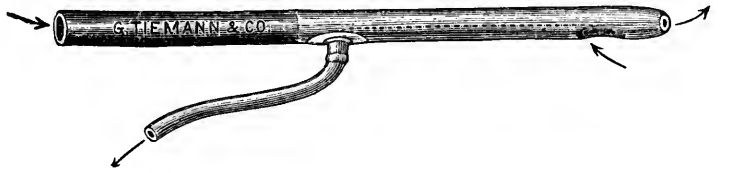
[After the discussion of the papers of Drs. Price and Cushing, Dr. Marcy presented, by permission, the following instruments:

1. A double soft-rubber drainage-tube with a diaphragm, made by Davidson Rubber Co., of Boston. The tubes are parellel and are inserted at right angles into the diaphragm, which is a flat disk with reinforced edge about one inch in diameter. It is vulcanized as a single piece. It was first devised for empyema, but it is serviceable for many surgical purposes.

2. Dr. Marcy devised some years since double rubber male catheters and tubes of varying length and size of 40 F., for washing out stomach, rectum, etc. These are in general use. In cystitis in the female, the

longer catheters are objectionable, because of their unnecessary length and greater cost. The double female catheter, as presented (Fig. 5), is only three inches in length in its double part; it is advised to be usually of about calibre 25 F., as this secures larger openings and a stiffer tube than smaller sizes. The efferent canal is three times larger than the direct, and there is little liability of closure from mucus or other cystic ecretion. Dr. Marcy has much confidence in commending their use, under proper conditions, in all cases of chronic cystitis.

Fig. 5.



Double female catheter.

The fluid to be used, of course, depends upon the conditions present, but apart from the septic condition now generally accepted as the common cause of cystitis, and which requires a suitable local remedy, marked relief, as well as great good, results from a systematic washing out of the bladder with warm water first boiled and cooled to comfort. It is to be applied in continuous current, by the use of this simple device, long enough to secure the secondary effect of the douche; daily or oftener. The patient, after instruction, has difficulty in its use without an assistant, and only the weight of a column of water is sufficient to secure a continuous flow. The patient is instructed to assume the recumbent posture, and the efferent stream is to be directed into any convenient receptacle.

By the proper use of the double current, continuous irrigation of medicated solutions, as may be demanded, chronic cystitis is, as a rule, a curable disease. The catheter is most excellently made and kept in stock by Tiemann & Co., of New York.

3. Dr. Marcy also presented a new form of depressing speculum. The use of the Martin depressor is objectionable, since the solid handle causes the irritating outflow to run over the hand and be continued as a drip from the elbow, if held in the most natural position. To obviate this, experiments were conducted at the clinic by Drs. Cushing, Nelson, and others, in conjunction with Dr. Marcy, with lead pipe variously shaped. The object in view was the securing of a hollow handle. Dr. Jones, of Cambridge, at Dr. Marcy's suggestion, added

the blade of the Martin depressor to a hollow handle, making a nicely plated instrument, which serves well and has been in use for a year or more, and is sold as the Jones's speculum by the Boston instrument dealers. Based upon his studies of the floor of the pelvis, the results of which Dr. Marcy will present to the Association this afternoon, he concluded that the use of the depressor should be limited to a control of the levator muscular loop. If this is true, in operations upon the uterus, the depressing portion of the instrument, longer than necessary for this purpose, is not only needless, but actually detrimental, since it acts as a barrier to the drawing down of the cervix toward the vulvar opening. To obviate this, Dr. Marcy had constructed the instruments here presented in order to secure a better hold of the levator loop and cause less traction upon the tissues of the vulva posteriorly; the depressing portion is changed in shape by a slight lateral or winged extension, pressing, when in position, within the vulva. The handle is roughened for a better grasp, and the end designed to be received into a rubber tube to carry the outflow where desired. It is offered as a simple, inexpensive instrument of great convenience in operations upon the cervix, or uterus, when the irrigation of the parts is deemed important. The instrument is well made and kept in stock by Messrs. Codman & Shurtleff, of Boston.]

THE TREATMENT OF SUPPURATIVE PERITONITIS.

By WILLIAM H. MYERS, M.D.,
FORT WAYNE, INDIANA.

It is getting to be a truism that pus forming, or an abscess having formed in the brain, in the pleural cavities, joints, or solid viscera, these conditions are amenable to surgical interference at the earliest possible moment, when we have arrived at an exact diagnosis. I may as well state here and at once that I know of no reason why the same general principles should not apply to the largest serous sac of the body, where life is endangered from the irritant nature of its inflammatory products. It would be needless to speculate upon the chances of recovery with fluid, poisonous in its nature, pent up in the cavity of the peritoneum, or why it should be allowed to remain in contact with an absorbing surface far surpassing in extent any other in the human body. It has been found advantageous where life is in peril to free the peritoneal cavity from its poisonous contents, either with the trocar, aspirator, or the knife.

The trocar and aspirator are now, as curative procedures, almost abandoned and relegated. As methods to enable us to arrive at precision in diagnosis, they have been both recommended and condemned.

Purulent collections, the result of peritonitis, like similar collections elsewhere, ought to be evacuated by free incisions with the knife. In studying the peritoneal literature to which I have had access, I could not fail to notice the great changes in the surgical treatment of the peritoneum now, as compared with the past. I was strongly impressed that the progress had been tentative, resembling in many respects the progress made in the treatment of empyema; it being no longer confined to the use of the trocar or aspirator; they have been abandoned, and the free use of the knife substituted with highly satisfactory results.

I wish now to emphasize distinctly that I do not believe that

peritonitis is ever idiopathic; that it is spontaneous in its origin; nor that the peritoneum is ever the seat of independent inflammation, but that it is peculiarly liable to inflammation of a secondary character, the irritant proceeding from without, as in wounds, or from one of the organs lying beneath the membrane; or, from injuries to the abdominal parietes; rupture of hydatid, ovarian, or other cysts; the bursting of an abscess; perforation from disease of the hollow viscera; these being the most common causes.

If we accept as true the views here advanced, it must modify and may entirely recast and lead to new views and practice. "It is probable that the future has much in store for us in the surgical treatment of acute peritonitis, especially that form caused by perforation of the stomach or intestines, and the like." The author of the above quotation evidently was reflecting upon the septic origin of the inflammation of the peritoneum, the presence and propagation of bacteria, the peculiarly favorable environments on the extensive surface supplied with material highly nutritive, soil not easily sterilized, with temperature highly favorable to rapid proliferation; these tending to render inflammation of the peritoneum acute and rapidly suppurative.

In the language of Hutchinson, "It is almost impossible to exaggerate our conception of the wild-fire rapidity with which inflammation of the serous membrane may extend when once an adequate cause has been supplied." I think the rapid extension here alluded to, and the adherence to the "opium habit" by the medical profession, with its attendant mortality, have led to the progressive invasion of this once purely medical region by the surgeon. In a case of intestinal obstruction reported by Mr. Barker, in the *Transactions of the Clinical Society of London*, 1886, he remarks: "As to the question of abdominal section in the midst of acute general peritonitis, I cannot help thinking that there are many cases in which, far from there being a contra-indication to the operation, it ought to be held urgently to call for it."

As ovariotomy is the parent of peritoneal surgery, I will present a few cases in support of the idea advanced by Mr. Barker in which ovariotomy was performed during the progress of acute peritonitis, as they bear directly upon the subject of this paper.

CASE I.—Ovariotomy during the progress of acute peritonitis. Recovery. Keith.

CASE II.—Ovariotomy during peritonitis with suppuration of the cyst. Recovery. Dr. Tracey.

CASE III.—Ovariotomy during acute peritonitis, with inflammation of the cyst. Recovery. Mr. Teale.

CASE IV.—Ovariotomy in the fourth month of pregnancy, after rupture of the cyst and peritonitis. Recovery. Wells.

CASE V.—Ovariotomy, suppurating cyst, containing fifteen pints of very offensive pus. Peritonitis. Recovery. Meredith.

Wiltshire, in a paper upon traumatic rupture of an ovarian cyst, uses the following language: "As I was able to show many years ago, the presence of peritonitis is not always a bar to operation; on the contrary, it may be the chief indication of the necessity for operation, being itself due to acute cystic changes, and subsiding only on their removal."

If this principle be accepted—and I believe it now is—then attempts at radical cure may justifiably be made in appropriate cases, even in the presence of peritonitis.

Cases Treated by the Use of the Trocar and Aspirator.

CASE I.—(This case, reported to me by Professor Annandale in the following letter, is, perhaps, the first authenticated case in which the trocar and washing out of the abdominal cavity were resorted to as curative measures in suppurative peritonitis.)

EDINBURGH, August 16, 1888.

DEAR DR. MYERS: In the year 1860, when House-Surgeon in the old Royal Infirmary of Edinburgh, I was asked by the late Professor Hughes Bennett to treat a case of suppurative peritonitis in a man aged about fifty. Professor Bennett desired me to place the man in a hot bath; to tap the abdomen under water; to drain off all the pus, and then to pump hot water into the peritoneal cavity until the water came out clear. I carried out the proceeding exactly as he wished me. The patient died several hours after. But this is certainly one of the first, if not the first, instance of operative treatment in this disease, and Professor Bennett appears therefore to have anticipated what is now a recognized procedure,

Yours very faithfully,

THOMAS ANNANDALE.

CASE II.—May T., æt. nine. Acute peritonitis. Tapped with small hydrocele trocar. Three pints of pus evacuated. Recovery. Green. *Lancet*, 1885.

CASE III.—Patient æt. twenty-eight. Traumatic. Abdomen swollen. A trocar was entered to the left of and above the umbilicus, followed by copious discharge of pus. Recovery. *Lancet*, 1883.

CASE IV.—Purulent peritonitis. Pus evacuated by trocar. Recovery. Barker. *London Medical Record*, 1886.

CASE V.—Purulent peritonitis. Treated by aspirator and drainage. Cured. *London Medical Record*, 1873. Brueneke.

Cases of Purulent Peritonitis Treated by Incision.

"Truc has collected a series of ninety-seven cases of deliberate surgical interference with the peritoneum, and this numerical statement alone suffices to show the rapidity with which the treatment has spread." (Treves.)

To the above list I will add the following reported cases:

CASES I and II.—Two cases of peritoneal abscess following attacks of typhoid fever treated by incision; after the evacuation of pus, drainage-tube inserted. Recovery. Thoroughgood, 1885.

CASE III.—May 16, 1887. The peritoneal cavity opened by median incision followed by washing out the cavity and drainage. Recovery. Clark.

CASES IV and V.—Laparatomy in two cases of perforative peritonitis successfully treated by incision. The cavity was washed out with a warm solution of salicylic acid; inflammatory deposit scraped away from the surface of the intestines. Oberst.

CASE VI.—Laparatomy in a case of suppurative peritonitis. Girl, æt. twelve years. More than six pounds of odorless pus escaped; the peritoneal cavity washed out with boro-glyceride; drainage. Recovery. Studensky.

CASE VII.—Purulent peritonitis treated by abdominal section. Cavity washed out; drainage. Recovery. Robertson.

CASE VIII.—Laparatomy for purulent peritonitis. Royal Infirmary, Edinburgh, February, 1886. Recovery. Halliday Croom.

CASE IX.—(To this list I will add one of my own cases.) Laparatomy for wandering spleen, lying in the peritoneal abscess. The spleen removed. Drainage. Cavity washed out with carbolized water daily. Recovery. Myers.

To this list I may further add ten cases of laparatomy for chronic and acute peritonitis, reported by Mr. Lawson Tait, in his work on *Pathology and Treatment of Diseases of Ovaries* (1873). Recoveries.

By far the most frequent cause of suppurative peritonitis is perforation of the vermiform appendix. Where it occurs the only chance of life lies in opening the abdominal cavity early and freely, washing it out, and draining it. This is the treatment, whether the peritonitis be general or local.

The diagnosis once made, when and how shall we operate? No definite time can be fixed; the urgency of the symptoms alone is

to be considered. Where shall the line of incision be made? Shall it be a median, or immediately over the cecum? Marcus Beck believes the incision should as a rule be made above the outer part of Poupart's ligament, and should be three inches in length. This would enable the surgeon to reach the point more rapidly, particularly if deep-seated and low down in the pelvic cavity. After thoroughly cleansing the abdominal cavity, and inserting a large-sized drainage-tube, the treatment is complete.

Perforating Typhoid Ulcer.—In 1885 Professors Kussmaul and Luecke; and Mr. Bartlett, of Birmingham, in 1886; Bontecou, of Troy, New York, and Thomas G. Martin, in 1887, attempted by laparatomy to close up the perforation in the intestine and by cleansing the abdominal cavity to rescue their patients from impending death. So far no successful case has been reported.

Dr. J. C. Wilson, of Philadelphia, pleads earnestly for operative interference, if during the period of convalescence, and when the condition of the patient is tending toward health, the typhoid ulcer shall extend through the intestinal canal.

Perforating Ulcer of the Stomach.—Grieg Smith says that the operative treatment of perforating ulcer of the stomach has yet scarcely a history; but few successful cases are reported; irrigation is recommended during and after the exploration.

Puerperal Peritonitis.—Dr. Barnes, in the discussion of puerperal septicemia in the British Gynecological Society, used the following language: "Wherever pus forms and collects in the abdomen and pelvis, I believe the indicatiou is strong to make an incision into the abdomen so as to give it exit." He was sure that in cases in which there might be fair grounds for supposing that septic fluids were present in the peritoneal cavity in the puerperal state, the abdomen should be opened and washed out. At present, if our clinical observations are sufficiently minute, we may place these conditions on a sure diagnostic basis; they will dispel all differences of opinion among practical gynecologists as to the proper treatment.

I will close this paper by two quotations, the first from Lawson Tait in his address before the Gynecological Society of Great Britain upon the question of operative treatment in puerperal as in other forms of peritonitis, in which he says: "I have now come to the deliberate conclusion that it is an act of almost criminal omission to allow a case of peritonitis to die without an abdominal section."

The following is from a letter of recent date received from Mr. Grieg Smith, of Bristol. He says, "that in cases of suppurative peritonitis the peritoneum should be treated for a few days in a hot aseptic solution; by keeping the intestines bathed in an innocuous or mildly antiseptic fluid, peritoneal adhesions are prevented."

It might seem to us that we had arrived at an ultimate truth, but let us not forget that the fact of to-day may be revolutionized to-morrow by some new appliances for research, or some fresh experiment.

LAPARATOMY IN PERITONITIS.

By E. E. MONTGOMERY, M.D.,
PHILADELPHIA.

The dread of disturbing the peritoneal cavity has been so great as to justify well the assertion of Wagner, that he and his contemporaries had been nurtured in the fear of the Lord and the peritoneum. Inflammatory and suppurative processes that in other portions of the body would have received early surgical intervention, were here allowed to continue their course undisturbed, until the vital forces of the patient were exhausted, or Nature had fortunately furnished a channel of exit. This seems the more remarkable when we consider the work that had already been done in the field of abdominal surgery. Peritonitis varies in its phenomena according to the condition producing it. The existence of idiopathic peritonitis was formerly denied, but it has been demonstrated that the disease can arise from exposure to cold and dampness. In this form the quantity of exudation is limited, unless the inflammation is very acute, and is likely to be of a serous or a fibro-serous character. As the inflammation subsides, the exudation is absorbed, and after recovery the patient seems none the worse for the attack.

Such a fortunate result, however, is the exception rather than the rule. The exudation more frequently becomes purulent, or there is an early secretion of pus. Pus collections occur in the abdominal cavity, either as an exudation or as encysted collections, and may result from either acute (partial or diffuse) or chronic peritonitis. The collections of pus in the circumscribed form are generally of slight extent, and are most frequently found in the region of the vermiform appendix and female sexual organs. In chronic peritonitis the quantity of fluid exudation is not usually very considerable, and but rarely of a purulent character. The largest and most extensive collections of pus take place in acute peritoneal inflamma-

tions, and are frequently the product and residuum of such disease. The purulent exudation is more likely to occur in the puerperal and metastatic forms, in which it is introduced through contact of the peritoneum with heterogeneous bodies and fluids, and ulcerative processes in the various abdominal organs.

According to Bamberger, the exudation in its beginning is fibrinous, but that there is a primary pus formation is evident from the fact that Abercrombie and others have found pus in the abdomen, where death had occurred within forty-eight hours of the beginning of the inflammatory process. Kaiser, in a case of puerperal peritonitis of thirty-six hours' duration, found over a gallon of pus. As it is now recognized that the maxim, *ubi pus ibi evacua*, should govern as well in the peritoneal as in the pleural cavity, the question of how we shall determine the presence and character of an exudation is an important one. Kaiser says that, from the early part of the present century, the following complex symptoms were considered as indicating empyema of the peritoneum: "If the patient continued eight or ten days sick without any alleviation, we had every reason to fear this sad termination. If, up to this time, he has had severe chills, cold extremities, and the abdomen becomes less painful, but is swollen, heavy, and doughy, evening chills, pulse continues the same or is smaller (a symptom that Abercrombie regarded as very ominous), frequent, free, and offensive fecal discharges, and the various excretions and secretions remain disordered, it is probable that pus is either forming or has formed." An important indication of its presence is hectic fever. Martin concedes the purulent character of the exudation if at the end of the acute stage of the peritonitis:

1. Fluctuation is distinct;
2. The quantity of fluid remains stationary, or slightly decreases;
3. The limits of the dull percussion sound are increased in the upright position; and
4. Alteration of the level of dulness takes place according to position. Attacks of chills, cessation of spontaneous pain, continuation of sensitiveness upon contact and movement, make the diagnosis certain. The fourth rule cannot be insisted upon as absolute, for the pus may—indeed, is likely to—become encysted, and its level does not change with the body movements.

The diagnosis, if suspected in the peritoneal cavity, can be con-

firmed by exploratory puncture, which may be done by the use of the hypodermic, or a small aspirator needle.

Small quantities of pus, or large collections, enclosed between the folds of the intestines and mesentery, are difficult to recognize. By palpation, percussion, and exploratory puncture, we are able to recognize only collections sufficiently large to produce dulness upon percussion, afford the sensation of fluctuation, or are palpable as swellings. The most readily recognized are collections in the anterior abdominal wall, and in the pouch of Douglas. A free effusion in the latter is chiefly felt as a trifling sense of resistance, which Hegar says, at best, is similar to the resistance of a feather pillow. The posterior vaginal fornix, however, is perceptibly broadened. Pus may form in the sub-serous tissue of the anterior wall (peritonitis externa) to be differentiated from an intra-peritoneal collection. Frequently both forms may combine and render the diagnosis still more difficult. It should be remembered that an extra-peritoneal abscess may penetrate inward and produce an attack of peritonitis.

Cases of peritoneal empyema may terminate in several ways:

1. Absorption of the serum may occur, and even pus corpuscles may be taken up by the lymphatics, but mostly after they have undergone fatty metamorphosis.

2. Inspissation, cheesy metamorphosis, and cretefaction of the pus through absorption of the serum, disintegration and cretefaction of the detritus. This deposit remains a source of danger, as by its absorption it may lead to the development of pyemia and tuberculous processes.

3. Decomposition of the pus and the formation of gases, which always result fatally unless an early evacuation of the poisonous elements is secured.

It should be remembered that while pain is the most frequent symptom of peritonitis, cases occur in which the onset of the disease is very insidious, and pain is entirely absent. A case of puerperal peritonitis occurred in the writer's experience in which, in addition to absence of spontaneous pain, the distended abdomen was not sensitive to pressure, and could be kneaded over without the patient showing any trace of suffering; she died within thirty-six hours, and the autopsy disclosed over a quart of pus within the peritoneal cavity.

The progress of purulent peritonitis is extremely rapid, and its fatality is well known. The cause of death is the rapid absorption from a large serous surface.

It is not the purpose of this paper to discuss the medical treatment of this disorder. Non-purulent effusion may be evacuated by puncture, but suppuration in the peritoneal cavity should be treated like suppuration in the pleural and articular cavities, and the result will correspond to the promptness and thoroughness of the treatment. No procedure short of laparatomy is justifiable, for it allows thorough evacuation of the pus, complete cleansing of the abdominal cavity, separation of the adhesions (which may form collections of pus), the removal of exudation, and perfect drainage. It also permits thorough examination of the abdominal cavity, and may enable us to discover and remove the cause of the inflammation.

Barwell, in a case of suppurative peritonitis, contented himself with washing and sponging out the abdomen thoroughly, and closing the wound without drainage. He objects to the insertion of the drainage-tube from above, as being an ineffective method of emptying the cavity. Treves, Truc, and others, favor the drainage-tube, practising frequent irrigation where the conditions require it.

In the puerperal form, suppuration is a prominent and early result. In the hyperacute, the progress is exceedingly rapid, terminating in death in two or three days. The surgical treatment is exceedingly important, and is especially indicated by marked tympanites and peritoneal effusion. The tympanites may be relieved by intestinal puncture, as was first practised by Depaul. If the effusion is simple serum it, too, may be evacuated by puncture, but where sanious or purulent, laparatomy and drainage should be practised.

Perforative Peritonitis causes a great diversity of opinion as to the limitations of the operative procedure in its traumatic and pathological forms. Escher and Truc would limit the performance of laparatomy to the cases of traumatic origin; for in these the adhesive inflammation cannot be relied upon to limit the escape of the contents of the viscus. The patient is usually healthy; the tissues of the viscus are in good condition, and sutures are readily borne, should resection be required. In pathological conditions, the adhesive peritonitis can render more valuable service; the intestine may be extensively diseased; the condition of the patient is

usually exhausted by the duration and character of the disease, so that the strength is not fitted to endure a protracted operation, and the softened state of the tissues gives no guarantee of continued closure. Hence, they would not operate in perforations resulting from typhoid, dysenteric, and tuberculous ulcers. Mikulicz, however, advises the operation in every case of perforative peritonitis in which the patient is not already in collapse, and directs that the operation should be done as soon as possible. A number of successful cases seem to demonstrate the wisdom of such advice.

Ebstein lays stress upon the abdomen being hard and rigid as an indication of impending perforative peritonitis. After perforation we are likely to find the abdomen distended from the escape into, and the formation of gases in, the peritoneal cavity. The distinction between intestinal and peritoneal meteorism as they occur in acute and perforative peritonitis, Wagner says, is that in the former coils of intestine are visible, and movements may be felt, or, at least, heard by auscultation; while in the latter, no movements are perceptible by any method, for the intestines are pushed back by the gas in the peritoneal cavity. The treatment, as has already been indicated, is to open the abdomen, search for and suture the perforation, cleanse the cavity, and use drainage if necessary.

Peritonitis resulting from *rupture* of *abscesses* demands prompt laparatomy, and the success of Tait, Treves, Israel, and Burchard shows that this operation with careful cleansing of the abdomen can save the patient.

In no class of cases, probably, is the abdominal surgeon more tried than in inflammations of the cecal region. Cases of inflammation occur and are medically treated, while the surgeon anxiously watches the case until the severe symptoms subside and convalescence takes place, and then rejoices that he did not yield to the temptation to operate. Another case will have an attack apparently no more intense, will for a time progress well, and then will undergo a sudden augmentation of the inflammatory action, and the patient rapidly succumbs. It is a constant regret that this patient had not been subjected to operation. Some years ago I was called to treat a young man, nineteen years of age, who complained of severe pain in the right inguinal region following diarrhea. Upon examination this region was found exquisitely tender to pressure; a tympanitic swelling extended upward and toward the median line. He was promptly

placed in bed, leeched, brought under the influence of morphia, and kept upon a liquid diet. The whole abdomen became tympanitic and tender, though the right side remained the most sensitive. The temperature did not exceed 102°. By the eighth day all the inflammatory symptoms had begun to subside and pain had ceased. Early on the ninth day I was called and found that he had been awakened from a sound sleep by a tearing pain, he was then in collapse, and died a few hours later. The autopsy disclosed that the end of the appendix had sloughed off; cecum and appendix were enveloped in a collection of pus, enclosed by the matting together of intestinal loops; the intra-peritoneal abscess sac had, however, been ruptured by a hemorrhage from the vessels of the appendix. The enclosure contained nearly a quart of blood, a portion of which, with the pus, had escaped into the abdominal cavity.

How are we to distinguish the cases for operation, and when should it be done?

In those in which it is evident, from the absence of severe pain and tenderness, tympanites is slight, and an accumulation of a semi-solid consistence, that fecal impaction or catarrhal inflammation exists, we may wait. In cases, however, in which the onset is sudden, pain intense, and the spread of peritonitis rapid, early treatment is important. Out of one hundred and seventy-six cases quoted by Fitz, thirty-four per cent. died in the first three days. In children the mortality reached seventy per cent. The majority of these cases result from perforation of the intra-peritoneal appendix. From this lesion abscesses form, allowing extravasation of feces, gas, and other infectious materials arising from necrotic processes, into the peritoneal cavity; or the intestines may be glued together, and shut off the infectious materials from the rest of the cavity, forming an intra-peritoneal abscess; or, again, through old adhesions the posterior peritoneum may be involved and form an extra-peritoneal abscess.

We have seen, from the rapid progress of the disease, the importance of early interference. Sands, in a successful case, operated upon the second day.

Operators differ as to the proper method of procedure. Sands makes the incision perpendicular to the middle of Poupart's ligament, while Willard made it parallel to the ligament; either incision would be preferable to the median in affording more convenient

access to the affected structures. If the appendix is found gangrenous, or the seat of perforations, its amputation and suturing of the stump would seem preferable to ligaturing the appendix, as has been done in some cases. After removal of necrotic tissue, and closure of the perforations, the peritoneal cavity should be thoroughly cleansed, a drainage-tube inserted, and the wound sutured and dressed.

The importance of at once giving free vent to septic or purulent collections in peritonitis following surgical operations upon the abdomen, is now a so well-recognized principle of treatment that it does not require discussion.

In no class of disease, probably, is the beneficial influence of abdominal section better displayed than in the treatment of tubercular peritonitis. This plan of treatment is purely empirical and its beneficial effects were determined by accident. For a knowledge of its value we are indebted to Sir Spencer Wells, who operated upon a case of supposed ovarian cyst which proved to be one of tubercular peritonitis, in which the cavity was studded with tubercular masses, and omentum and intestines were matted together. This patient was in good health twenty-three years later.

A number of cases have occurred in which laparatomy has been done under mistaken diagnosis in tubercular disease, with almost universally favorable results. In this connection, a case of my own, I trust, will not prove uninteresting.

A girl, aged sixteen years, was seen in consultation with Drs. Heilman and Stone. She had been suffering for four days with frequent attacks of vomiting, which later had become stercoraceous; the abdomen was very tympanitic, and quite tender to pressure. No fecal evacuation had occurred since her sickness, and the secretion of urine was scant. The highest temperature had been 101°, pulse 120. General appearance was bad. She had been a very slight, poorly nourished girl before this attack. She was supposed to be suffering from intestinal obstruction, and laparatomy was determined upon with a view to ascertain and, if possible, remove the cause. A median incision, about five inches long, was made, and a few ounces of dirty serum removed. The intestines were drawn out and examined, but no obstruction found. The peritoneum was studded with millet-seed sized tubercles. A number of punctures were made in the intestines with a hypodermic needle to evacuate the flatus and enable us to close the wound; the cavity, owing to the bad condition of the patient, was hastily washed out, and the abdomen closed. Two days later the bowels were freely

moved, and the subsequent progress of the patient unusually rapid. Her condition of health and general appearance since have been very greatly improved.

Of thirty cases collected by Kummell, and six by others, but six ended fatally. In a number various antiseptics, as iodoform, carbolic acid, and corrosive sublimate, were used; but the relief seems just as certain and permanent where the operator has contented himself with merely washing or sponging out the cavity with pure water. The favorable result is attributed to the removal of the serum, which serves as an excellent culture-fluid for the multiplication of the bacilli. The unexpected relief obtained in such cases by laparatomy might lead to the correctness of the diagnosis being questioned; but the cases of Poten, Hartwig, and others, in which portions of tissue were removed and found to contain the characteristic bacilli of tubercle, and in which the results were equally favorable and permanent, leave no doubt as to the correctness of the diagnosis.

Schwarz gives the following indications for the operation:

1. In securely fixed diagnosis of peritoneal tuberculosis, where incision should be preferred to the customary puncture.

2. Where the operation is performed, remove the transudation completely, preferably in the dry way, disinfection of the peritoneum, and exact closure of the wound.

3. Youthful age should, according to surgical experience in other forms of the disease, afford no contra-indication to the performance of the operation.

4. A moderate affection of the lungs should be no contra-indication to the operation, but an additional indication for it, as through the removal of the transudation the respiration is improved, as well as strength and general health.

Incision has the advantage over puncture as a method of treatment, in that, after the former, ascites does not return, while it is the rule for it to accumulate rapidly following the latter.

In conclusion, we cannot do better than quote the following from Truc: "The opening of the abdomen has lost much of its gravity, and we believe that we have demonstrated that certain forms of peritonitis can be cured by opportune and methodical surgical treatment; that is enough to condemn systematic refusal to operate." Instead of being a contra-indication, it (peritonitis) should become a

positive indication. Death, in the cases of which we speak, is certain; we have seen that the operation may save the patient. Why hesitate to give the latter some chance of recovery?

DISCUSSION ON THE PAPERS OF DRS. MYERS AND MONTGOMERY.

Dr. Henry O. Marcy, of Boston.—I consider it a great privilege to rise and express my thanks to Dr. Montgomery, though I have little to add. It is now nearly two years since I opened the abdomen in a case for exploration, because of a thickened post-uterine mass. The patient had been six months under observation, gradually growing worse. The diagnosis had not, by any means, been certain. It had not occurred to any one that she had tuberculosis; but the exploration showed that the whole peritoneum was studded with the little masses so familiar to all. There was no especial amount of serum. The abdominal cavity was washed out with a sublimate solution, but not very thoroughly. Before closing the cavity I cut off a strip of tissue and submitted it to Dr. Nelson, who made, not only a careful microscopical study, but cultivated the bacilli by artificial process, so that there was no doubt about the condition. It happened strangely that the patient from that moment began to improve. The following May she sailed for Europe. Recently I have heard from her, and she is comparatively well; able to do a good many things she could not have done six months prior to the operation.

Dr. A. P. Clarke, of Cambridge, Mass.—I have listened to Dr. Montgomery with much interest. Several years ago there occurred in my own practice a case of sudden and severe abdominal pain in a man of the middle period of life. The case at first resembled one of severe colic. Within thirty-six hours the symptoms of the patient became alarming, as peritonitis had supervened; the cause of which being obscure, laparatomy was advised. The operation was declined by the patient and friends. At the autopsy there was found a small rupture of the intestine, which might easily have been closed had an early operation been attempted. The case was reported before a medical meeting, and there was considerable doubt expressed at the time as to the advisability of resorting to laparatomy in cases of peritonitis. Soon after, Dr. Marcy invited me to see a case in which exploratory incision was made very late. Had it been done earlier, I think it would have been successful.

Since then I have had opportunities of seeing many cases of exploratory incision resulting favorably; I, therefore, hope and feel encouraged to believe that the operation is not only feasible, but one often demanded. I may further add, that not long since I saw a girl, thirteen years old, who had symptoms of intestinal phthisis. A very small exploratory incision was made, drawing off all the serum, which, in this case, was unusually abundant. The operation enabled me to demonstrate the presence of tubercle bacilli. The wound rapidly healed, and the patient apparently has recovered her health.

Dr. Edwin Ricketts, of Cincinnati.—The discussion has not, in my opinion, been entered into as fully as was due this very important subject. I believe that the death-rate of peritonitis would be greatly lessened by abdominal section, if promptly resorted to. In the puerperal cases Dr. Thomas Savage, of Birmingham, England, makes it a rule to operate so soon as delirium manifests itself. In one case that I saw of Dr. Savage's not only was abdominal section resorted to, but also the appendages were removed, as they were dark in color, and undergoing the inflammatory process. The patient recovered. In the majority of these cases the general practitioner fails to recognize when to cease depending on medicine and to urge surgical interference.

It is not often that the abdominal surgeon sees these cases in the earlier stages. Many times a bad result is recorded against the abdominal surgeon, not from any failure on his part, but from the failure of the attending physician to recognize when was the time to operate that gave the best chance for success.

During my four months' assistantship to Mr. Lawson Tait, I saw five or six abdominal sections for peritonitis. Not a death followed. In all of these cases there were grave symptoms. I recall one case of tubercular peritonitis—a young woman—in which there was about one pint of purulent fluid removed. Dr. Anna Clark and I were asked to examine the patient's heart and give our views to Mr. Tait as to the advisability of giving the anæsthetic on account of the impoverished condition of her blood. We chose the least of the two evils—an operation. The abdominal cavity was washed out with warm water and a drainage-tube introduced. The temperature dropped from 103° to near normal, the patient making an excellent recovery.

I think it is the duty of every abdominal surgeon to do what he can in order to get the general practitioner to understand fully when to call in surgical assistance in these cases. Early interference is a very important question for consideration.

Dr. Thomas Opie, of Baltimore.—A remark has brought to memory a single case in my experience, in which I was called in by two

physicians on the third day after labor. The patient was then in a very bad condition. I asked immediately if there was not some traumatic origin of the difficulty, and was told that, as far as they were able to judge, there was none.

After hearing about the case I thought it pointed to traumatism. I insisted on a digital examination, and found there was a rent on the right side of the cervix. Possibly one blade of the forceps was not inserted in the os. The uterus was torn so that four fingers of my hand would go into the rent, though it was not traceable into the abdominal cavity. I thought the patient nearly moribund, almost beyond the point of hope, but the change was worth something. It was certain that death would ensue as she was, but there was some chance left in laparatomy. It was insisted upon by the friends that we should give the one chance. The abdominal cavity was opened, and a large quantity of serum and many adhesions were found. The patient died ten or twelve hours after the operation. I mention the case because I thought it was one in which it was right to give the patient one chance out of a hundred.

Dr. Montgomery, in closing the discussion, thanked the gentlemen for their remarks upon his paper. He said that it was unfortunate that Dr. Opie did not see his patient sooner, for her chance for recovery would have been enhanced thereby.

Dr. Myers in his paper emphatically expresses his disbelief in the probability of primary or spontaneous peritonitis. It is difficult to comprehend why a serous membrane like the peritoneum should not be as readily the seat of idiopathic inflammation as the pleura, which if anything is less exposed, and which no one will deny may be so affected.

The existence of idiopathic peritonitis has been demonstrated in his own experience and in that of others; but, as he had pointed out in his paper, such attacks were less liable to be attended with suppuration, and as the inflammation subsided the exudation was absorbed. In other respects he could not too highly commend the conclusions of the paper.

THE RELATION OF THE ABDOMINAL SURGEON TO THE OBSTETRICIAN AND GYNECOLOGIST.

By A. VANDER VEER, M.D.,
ALBANY, N. Y.

As I study the constitution, by-laws, and make-up of this new society, I observe that we have brought together elements which, if properly harmonized and "the principle of unity and research" preserved, cannot fail to benefit ourselves as individual members, and also that the influence which will go out from us will be for good to our profession throughout this broad land. In the paper I now present to you, I shall endeavor to bring out the points of the specialty which I in a small degree represent, and in such a manner as, I trust, may result in mutual good to us all. I have, in revolving in my mind the subject of this paper, been led to ask the question: Is there such a special department as Abdominal Surgery in our profession?

That was a grand union when surgery, freed from its barbarisms and ignorances, and no longer associating with or being part of the "Barbers' Company," united in honorable wedlock with medicine, and helped to establish that household in the healing art from which many of us who are here to-day have seen springing and going out the most of the grand specialties that have done so much for suffering humanity. We have seen Ophthalmology, Otology, Gynecology, Dermatology, Neurology, Laryngology, and many other specialties, develop and grow, and with such vigor that medical colleges have found it necessary to provide professorships for them, and hospitals have made appointments of attendants peculiarly fitted by study, education, and clinical observation to treat such cases as were necessarily relinquished by the active general practitioner in medicine. Just here I wish to quote from an address delivered not long ago by Prof. Virchow, who said: "Within twenty-five

years the great host of specialties has developed, and it would be vain, anyhow fruitless, to oppose this tendency; but I think I ought to mention it here, and hope that I shall be certain of approval, when I say that no specialty can flourish which separates itself entirely from the common source of science; that no specialty can develop fruitfully and beneficially if it does not ever and anon draw from the common fountain, if it does not take other specialties into account, and if all the specialties do not mutually assist one another, thereby acknowledging a fact which is not always considered necessary for practice, receiving knowledge through that unity on which our position internally and, I can also say, externally rests. It would be the most foolish and most dangerous development, if the system of specialties should ever come to such a pitch that special schools were to be founded, in which special branches were taught without any knowledge of the other things offered us by the science of medicine."

I would say all this positive and signal advance has been made, not in the spirit of hostility to general medicine, but to render aid to one another as we work against disease, and to make comfortable our suffering fellow-beings, and to add to the length of human life. Surgery has not accomplished it entirely alone, she has had the assistance of true medicine, but in doing what she has done, she has undoubtedly advanced medicine in a very great degree. To-day, and for the past ten or fifteen years, there can be no doubt that surgery, as represented in the work of our societies and in our text-books, has led medicine. One has but to consult our excellent medical journals to be convinced of this assertion. Of those who remember the crusade that was early made against ovariotomy, which was but the beginning of abdominal surgery, and who cherish the belief that the latter is not yet a distinct part of general surgery, but so limited as scarcely to command special attention, I would inquire: Why is it that special works are being published on abdominal surgery alone, and meeting with ready acceptance by the profession? And why is it that institutions that not many years ago issued commands that no abdominal section be done in private room or public ward, now build wards for abdominal surgery, and encourage the work by every manner of special appointment as to nurses, care, surroundings, etc.? Especially so can this be said of the Massachusetts General Hospital. I believe it safe to assert that

Abdominal Surgery may be said now to be a part of the specialties of Obstetrics and Gynecology. Just here I wish to assert that our profession is so great, and the benefit to it so marked, from year to year, that specialties must continue to exist, and in close relation. Would general hospitals have done what they have to accommodate specialists, but for the fact that the latter, in their special hospitals and otherwise, have demonstrated the necessity for such work? I am proud to state that in this country there are many hospitals that have both an obstetric and gynecological department, and this, I am sure, is a necessity that all general hospitals will have to meet. Has not the work of such men as the late Prof. S. D. Gross, Tait, Parkes, Sands, Weir, Senn, Greig Smith, Bull, and a host of others, now living, whom I might mention, demonstrated the fact that abdominal surgery has become a specialty? If we inquire into the manner of its development, we find that it has been the outgrowth of work done by the general practitioner. Not content to go on in the beaten track, he has seen fit to break away from tradition, and by careful and, it is true, bold innovation establish methods in practice that have resulted in untold good. I remember with pleasure a conversation I had with the elder Gross, but a few years before his death, in which he stated that his experience and observation had taught him that they made the best specialists who, having engaged for a number of years in general practice, finally confined themselves to that special department for which their studies, inclinations, and clinical observations and experiences had best fitted them. I am firm in the belief that these words apply with peculiar reference and force to him who attempts to practise as an abdominal surgeon. When we consider that every organ within the abdominal cavity is subject to surgical treatment, if from disease or traumatism it becomes necessary, it is difficult to conceive of a specialty that requires more careful knowledge of the minute and gross anatomy of the parts in and among which he *has* to do his work, or greater coolness and experience as an operator, or technique as an antiseptic surgeon.

As I have stated in previous papers, I am convinced that it is a specialty that must have for its successful issue certain operators assigned to certain territorial limitations. Many of the cases that call for treatment cannot be transported far, and the surgeon must go to them, though the surroundings may not be so good as in a

well-regulated private hospital or sanitarium; yet the abdominal surgeon learns by repeated experience to make them comparatively safe.

The intelligent public of to-day know so well of the advances made in this department of surgery, that every medical centre is presumed to have some one surgeon fully capable to cope with the sudden accidents that may and are so apt to occur to this portion of the human body. Does this same public opinion call for a gynecologist, be he ever so prominent, in a case of gunshot wound, intestinal obstruction, acute or chronic, or any abdominal traumatism? Is it not likely to be some surgeon in general practice, and especially one who has made abdominal surgery a study, and is not this opinion likely to receive the indorsement of the profession at large in that locality?

The operation for removal of a simple uncomplicated ovarian cyst is probably the easiest operation that occurs in all the range of the major operations in surgery; but when we come to the operation embarrassed, as it may be, by all the complications now known to us, it becomes one of the most difficult of all operations. The surgeon in its performance requires the greatest amount of skill, cool judgment, experience, and familiarity with the contents of the abdomen. Therefore, when operations are to be done for the relief of the traumatisms that may occur to the intestinal tract, or pathological changes therein that endanger life: or when the liver, gall-bladder, pancreas, spleen, kidneys, suprarenal capsules, the ureters, bladder, the uterus and its appendages, the appendix, the mesentery, and all that pertains to the abdominal cavity in its pathological changes of whatsoever nature requires operation; it is then that the calmness and experience that come from years of study in the post-mortem room, and of continued practice in general surgery, become of the greatest service to the patient and of benefit in the compilation of successful tables of recoveries. Wells, Tait, Keith, Peaslee, Sims, and others were once engaged in general practice. I would not be understood as doubting that many obstetricians, and especially gynecologists, have all these requirements to a large degree. Notwithstanding all that has been done within a short time by obstetricians, gynecologists, or abdominal surgeons to advance abdominal surgery, we are yet at the half-way house on the road leading to complete success, for not yet is made clear the best manner of operating,

the best place for the operation, nor the best way of dealing with all the various complications. Our entire profession must yet be taught much that pertains to abdominal surgery, and it must, to a great extent, be done by men of creative genius; men, who, seeing the work before them, and though not meeting with success at first, yet have the patience to work with method and perseverance, and with sincerity and earnestness, to accomplish that which will do what is yet required. The public are expecting much from us, and our work in this branch of surgery must be such as to command their entire confidence and utmost respect. In our society meetings, in the presentation of papers, in our discussions, we must be honest, and not hesitate to present our mistakes along with our successes. And then another good in societies like this, where men of various thoughts, working along different lines come together, we not only learn of points in operative surgery, but all that pertains to the use of drugs, etc., in the palliative and conservative treatment of the cases that come under our observation.

As regards the profession at large, think of it, only a short time since, at a discussion before one branch of one of our largest medical associations, there were only two or three present who were able to define clearly the improved Sänger operation, or knew much about the Cesarean section.

What we need, is not the elaborate presentation of theories by long and well-prepared papers, or the advancing of them with an emphasis that forces conviction for a time, and then a reaction that leaves us to doubt and cynicism, but rather the offering of practical papers that will give facts, and the accumulated wisdom and experience of honest workers. We should encourage the reporting of cases as has been done by many workers, both in this country and abroad, and study carefully the hard, laborious, practical experiments of men like Senn and his associates.

Specialism in society work and journalism should be encouraged by the profession at large. It is only in this manner that the traditional errors transmitted frequently from one text-book, or from one edition to another, are corrected. Perhaps one of the greatest benefits to the profession in our time, and which has been developed so thoroughly abroad, is the writing of prize essays on some special subject. Equally so are we indebted to those who, in this country, have edited and published encyclopedias upon medicine

and surgery, in which the very best specialists have been employed to write up the different subjects. The result has been, that the great thinking and reading portion of our profession, go where you will, have in their libraries, and at their command, the most advanced thoughts and experiences from which to draw when treating their difficult cases. I wish to emphasize the admiration I have for the out-of-the-way practitioner in some far-off lonely town, where his lot has been cast, who is so often obliged to rely upon himself. He does his work in many instances more bravely than his city brother, who has but to call upon the specialist near at hand to help him out by consultation and otherwise. Think of Bopps in his first cholecystotomy, of McDowell in his ovariotomy, of Sims in working out the early problem that presented in his gynecological work. Also of the elder Atlee, and Kimball, and that quiet and earnest man, of whom we are now just learning, when he is sleeping the sleep of death. I refer to the late Dr. Walter Burnham, of Lowell, Mass., whose three hundred and thirty-eight cases of abdominal section have just been reported by his grandson, Henry P. Perkins, Jr., M.D., in the *Annals of Gynecology* for May, 1888, Boston. Dr. E. R. Peaslee told me, some time previous to his death, that he did much of his best writing when doing comparatively a country practice, and jotted down his rough notes while riding from one patient to another.

I would that our medical colleges, in the advances they are making, might do more in the teaching of specialties by appointing practical teachers, men who, from hospital appointments, have acquired, by close study, rare opportunities for observation, and faithful work, knowledge that should be given to the medical student. For the doing of much of this, we should give all credit to our post-graduate schools, which in this country are giving forth such creditable work. It has been well said that the greatest advances in surgical science and art, at the present time, are made through special attention to certain lines of study and practice. As abdominal surgeons, we should move carefully, but at the present time we must be active, and on the alert to make use of the constantly increasing material that presents, and from which to draw our practical deductions. Think of the improved change that has occurred in the practice of general surgery within a period of ten years. All things must be utilized by the abdominal surgeon. The

greatest comfort and strength to be drawn from all this change, is the tolerance by, and its acceptance on the part of older, staid, and conservative members of the profession. They have learned to know that the improvements are real, and accept them as such in true faith. There was a time when it would have been safer to ask these men to change their form of religious worship, than to change, as they have, their methods of surgical practice.

This country is rich in its strongly conservative, yet strongly progressive men. The words of one, Prof. Fordyce Barker, I feel impelled to quote, saying that "he learned only from the young men in the profession." The time has passed by when prejudice can be, and is, allowed to maintain and perpetuate error.

You will observe that my views are in favor of supporting abdominal surgery as a specialty, but it cannot stand alone, it must have the support of other specialties, and of the profession at large. Pardon me for repeating my belief, that in this new society we have formed a combination that illustrates well that trite but true saying, that "in union there is strength."

I believe there is no country in the world where the obstetric art has progressed to a greater degree of perfection than in America. Those of us who have been in general surgical or gynecological practice for twenty-five or more years can attest how gradually have lessened the cases of vesico-vaginal fistula and other forms of traumatism to the female sexual organs during parturition. Much, very much of this, is the result of increased skill on the part of the obstetrician. The vectis is now obsolete, and would not those who once employed it so honestly, could they rise from their graves, laud and praise the improved obstetric forceps, and its royal assistant chloroform? The work of the obstetrician is the most arduous, important, and responsible of any part of our profession. To him are trusted the lives of our dearest ones, and yet how wearisome and anxious is the calling. He becomes perfect in all that pertains to his art, particularly in any abnormal condition that presents, and yet in acquiring it in individual cases he is often too tired to go on with a major operation. Especially is this true as applied to obstetricians who practise in country towns, larger villages, and smaller cities. The exacting nature of their work, that admits of no postponement, the additional care of family practice that is forced upon them; these, together with other pro-

fessional exactions, carry them into an atmosphere that is uncongenial to the technique and preparation necessary for abdominal section when the emergency of the lying-in room requires it. The abdominal surgeon finds comfort, as his cases require it, in the throwing off of his general surgical practice, and, conversely, I have seen good, thorough obstetricians unwilling to enter the abdominal cavity because the case or cases they had just attended, or were attending, unfitted them for it.

There are many excellent, bold, grand, and intelligent abdominal surgeons among our obstetricians in this country, and this is fortunate, especially among those who live in large cities. Everywhere they are to be found, who are able to tell all about the measurements of the pelvis, and when a case can no longer be trusted to nature, in consequence of some malformation or abnormality present. And I believe I state the truth, that the tendency in their practice is to lessen the number of craniotomies, and to resort to what seems a more modern successful operation; that is, abdominal section in some form whereby both mother and child may be saved, and the former, at least, be kept from long, wearisome and fruitless suffering. I may be wrong, but I am convinced that the obstetrician and abdominal surgeon should work in perfect harmony, that the latter bears to the former much the same relation that the general surgeon does to the neurologist in his brain surgery. The obstetrician, like the neurologist, will make his diagnosis, but the surgeon will often be called upon to do the operation. I do not wish to be understood as refusing the right to obstetricians to operate, and especially does this latter remark apply to those who live in the larger medical centres.

The work of the abdominal surgeon will necessarily lead him into the field of gynecological practice; that is, the major portion, not the minor part of gynecology. The obligation is so great, that he must prepare himself accordingly. There are many good gynecologists who are successful in treating of misplacements—in fact, in everything that pertains to their specialty, aside from doing an abdominal section, and this they assign to some one else. Many of them are good in all that pertains to the repair of organs external to the peritoneum. They treat all forms of pelvic inflammation, and yet are unwilling to incise tissues that may be said to be out of sight. There is a number of such gynecologists, and they are

found throughout the country and in cities also. The abdominal surgeon cannot do without them, they assist him in diagnosis, in consultation, and in practice; and the public in the first wail of distress will insist that these two kinds of practitioners join hands in treating the dangerously sick one. The gynecologist may be the very best of abdominal surgeons, and especially in the section of territory he may occupy, and yet for all abdominal work, I think it is the exception. With pride, one can look upon the work done by the gynecologists of this country. It would hardly be proper for me in this brief paper to speak of individual members dead or living. Neither they nor the abdominal surgeons can do well without each other's assistance. I believe it requires years of the hardest study and effort to become a thorough abdominal surgeon; the number must ever be somewhat limited. Those who come from the ranks of general surgery, early, find it necessary to relinquish the rougher part of that practice, the performance of which in the years past has brought them an experience which is ever of service to his associate obstetrician and gynecologist.

Finally, is it not a fact that there is some danger that abdominal section may be carried too far if made too much of a specialty? Have we not in this society the conservative combination? It has been proven in the past, that the strictly obstetrical, and the strictly gynecological society does not always command the endorsement of friends or the profession at large. That our new society is moving in the right direction, witness the new Obstetrical and Gynecological Society that has just been organized in Vienna, and of which Prof. Breisky has been elected president.

DISCUSSION.

Dr. S. C. Gordon, of Portland, Maine.—It is exceedingly difficult to discuss a paper like this presented by Dr. Vander Veer, except to assent most cordially to the propositions advanced, for he has almost entirely covered the ground. A discussion, to be entertaining and interesting, must take issue with some points of the original subject. I can scarcely find any such point.

Abdominal surgery is now taking quite a different turn from for-

merly. The general impression prevailed among gynecologists that in order to insure success we must have our patients in special hospitals and with special accommodations.

My own recent experience justifies me in saying that while we should take all possible precautions for cleanliness and care, yet we must not allow a patient to die or suffer too long because we cannot remove her to a special hospital. I do not allow a patient to die for want of an abdominal section simply because she is living under bad sanitary conditions. I make the best of what I find, and the success of such cases confirms me in the opinion that special hospitals are no longer a *sine qua non* for abdominal surgery.

Dr. W. W. Potter, of Buffalo, New York.—The paper just read will, in my opinion, if properly studied and pondered, result in much good to the medical profession, benefiting alike those who practise specialties, and that large class who enjoy the honorable appellation of general practitioners.

I was particularly impressed with that part of Dr. Vander Veer's paper wherein the line was sharply drawn as to the impropriety of specializing before generalizing. He has, I think, called attention to a great evil, and our colleges I believe are directly responsible for the error. I am familiar with a number of instances in which graduates have passed immediately out from college and hospital instruction to the practice of a specialty. Nay, even further than this, they have sought, and actually obtained places as teachers in our medical colleges without having had any experience in the general practice of medicine, basing their claim for such places upon the fact of having graduated as specialists (?) and, therefore, are more competent to teach in their respective departments than any other class.

Now, this is a state of things which I desire to challenge as being radically wrong, particularly as applied to the departments of medicine that fall within the especial province of this Association to cultivate. I think it one of the evils of the present day—one, in fact, that our colleges are in a large measure responsible for. Who could properly lay claim to the title of abdominal surgeon, for instance, unless he had previously passed through the training school which the practice of general surgery affords, and, I may add, whose foundation would be laid all the firmer had he been previously a general practitioner?

This is equally true of the obstetrician, and it is also quite as true of the gynecologist. If there is any special field in medicine that needs a broad foundation of experience, such as can only be had by a general practitioner, it is that of gynecology; for the gynecologist may, under

certain circumstances, be called upon to assume the functions of all the others.

What one of us would trust our wives or daughters to the hands of a specialist who had never had any experience in general medicine, no matter how skilled in the use of the knife, or however expert in the mechanical details of an operation?

This Association can do much to elevate the standard of specialism, and to protect the general public from falling into the error of calling a man great simply because he possesses the courage to perform a brilliant operation. What the public most needs of an operator is, that he shall possess a well-poised, keen, and circumspect surgical judgment, and this, I affirm, can only be obtained through those long years of experience that pertain to the general practice of medicine and surgery. From the generalist to the specialist must, indeed, be the work of evolution.

SURGICAL TREATMENT FOR LACERATIONS OF THE PERINEUM AND PELVIC FLOOR.

By W. H. WATHEN, M.D.,
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I will not consume your time in vague theories to prove the relative value of the so-called perineal body in holding the uterus, etc., in position, or its action as the keystone of an arch, but will confine myself especially to the surgical treatment for lacerations or injuries of the muscular and aponeurotic structures that form the floor or diaphragm of the pelvis. There is probably no other subject in gynecology about which so much has been said that is of no real value, and hence a relatively simple operation has been made to appear so complicated that it is seldom correctly performed. We will pass by much of this immensity of pseudo-scientific rubbish, and take a practical view of the subject.

The fat in the areolar connective tissue of the perineum constitutes a valuable part of this structure, just as it does in other parts of the body, but it gives but little strength, and with the muscles and fascia destroyed is of no use in holding the vagina, uterus, rectum, or bladder in their normal positions. But all the perineum may be lacerated except the muscles and the fascia, and still we may have no displacement of the pelvic organs.

The muscles and the fascia in the perineum give it strength, and when they are lacerated no operation that does not tend primarily to reunite them is correct in principle, or will by followed by permanently good results. Prolapsus of the uterus, with rectocele and cystocele, may result from subcutaneous rupture of these structures, with no laceration or injury of the mucous membrane or other parts of the perineum. This condition is usually not diagnosticated by the attending physician, and the woman is subjected to various plans of treatment to hold the parts in position and relieve the annoyance from pressure, weight, etc., all of which give but little relief; nor

can she be cured except by an operation to bring together and reunite the muscles and fascia. Nearly all the muscles that contribute to the formation of the pelvic floor are united to the bony parts of the pelvis—symphysis pubis, tuber ischii, and coccyx—and are joined together by muscular or ligamentary union between the vagina and the rectum to give strength and protection to the perineum. The muscles are surrounded and protected by the three layers—superficial, middle, and deep—of the pelvic fascia, which are also joined together in the perineal raphé, and give additional protection to the perineum, and hold the rectum, vagina, and urethra in position.

The following are about all the muscles that constitute the pelvic floor, namely: the levator ani, the ischio-coccygeus, the sphincter ani, the constrictor vaginæ, the transversus perinei, and the ischio-cavernous; the levator ani and the ischio-coccygeus may be described together. The sphincter ani and the constricter vaginæ are the most important muscles in the perineum, and in surrounding the rectum and vagina they unite and form a figure of eight.

When any or all of the perineal union of these muscles, or of the fascia, is lacerated, unless at once united and held together, the muscular contractions continue to widen the distance between the torn ends, so that the vulva gradually becomes enlarged laterally. The extent of this lateral separation is governed by the degree of laceration and the length of time since it occurred. If the above is correct, then no operation will succeed that fails to bring these torn ends together so as to reunite them. This is a simple question that holds good in all operations to restore the perineum in complete or incomplete ruptures, and if we are controlled by it, and are familiar with the technique of the operation, success will nearly always crown our efforts.

I do not know of any operation that is not faulty in this particular, but the operations that accomplish this purpose best are those by Tait, Marcy, Duncan, Simpson, Langenbeck, Sänger, Hart, and Barbour; but, if I understand their methods correctly, they do not fully appreciate the importance of dissecting up and uniting the muscles and fascia. Emmet has done much to perfect the technique of the operation.

It would be a waste of time to mention the almost endless variety of operations that have been suggested or performed, most of which are of no real value to the patient, or, at best, give only temporary

and imperfect relief. No continued good results can follow secondary operations where the operator practises the usual form of denudation and removes only the superficial parts of the membrane covering the lacerated surfaces. He gets union of the surfaces of the mucous membrane only; the ends of the muscles and the torn fascia are still separated, and the perineum gives no firm or sustaining support. The muscles and fascia cannot be united in secondary operations unless we dissect up the torn ends by deep incisions, so as to bring them together and hold them in apposition. This is accomplished by a splitting process, something after the fashion of Tait, Langenbeck, Sänger, and others. The incisions should go deep near the anus on the lateral borders of the vulva, and the recto-vaginal septum should be split through the connective tissue between the vaginal and rectal layers, so that the vaginal flap may be thick enough to prevent sloughing.

In complete ruptures the incisions must expose the ends of the sphincter ani muscle, and the lateral and the recto-vaginal splitting must be continued and widened until it exposes, if possible, the separated muscles and fascia; but the operator must be governed by the condition he finds, and never make incisions more extensive than are necessary. In ruptures extending high up the recto-vaginal wall, and especially in ruptures of old standing, followed by atrophy of the tissues, where the ends of the muscles have become widely separated, the splitting will necessarily have to be made more extensive.

If the primary operation to restore the perineum is not done within twelve hours after the injury, it is hardly possible to get union. It is not necessary to give the reasons why the primary operation should be performed, as there are now but few men of recognized ability in obstetrics or gynecology who are opposed to it. In this list the name of the distinguished Professor A. Charpentier, of Paris, is conspicuous. His objections are illogical and are not sustained in actual practice where the operation is correctly done. There are a few cases of profound shock, or where the tissues are so injured that the parts will surely slough, in which any operation is contra-indicated. But these instances are rare, and the woman is nearly always benefited by the operation. I do not wish to be understood as urging the primary operation, nor the secondary operation, where there is only a short rent that does not involve the perineal muscles or

fascia. These cases do about as well without treatment, and, if they do not entirely unite, cause but little immediate or remote inconvenience. But if deeper lacerations are not operated on immediately, various complications may arise, including septicemia, uterine displacements, rectocele, cystocele, chronic inflammation of the bladder or rectum, subinvolution resulting in hyperplasia of the uterus, vagina, and other pelvic structures, weakening of the uterine ligaments, a tendency to abortion, impaired sexual desire or gratification to the husband, and neuralgia in the site of the rupture, or reflex disturbances; and, if the sphincter ani is entirely torn through, incontinence of feces and gases. If the muscles and fascia are much injured, we cannot expect the torn ends to unite perfectly unless held together by sutures. The union otherwise, if any, will be imperfect, and often of the integument and the superficial structures only. But if the operation is properly performed in partial or complete ruptures, union will be nearly perfect in most cases. Of course, the operator must be familiar with the correct technique of the operation, and must observe absolute asepsis. The same general principles should govern us in the use of sutures that apply to the secondary operation. I have operated in such cases often, and have never had a failure; in fact, the success is usually more perfect than in the secondary operation. The torn ends of the muscles and fascia are now easily held in apposition and unite within a few days. I operated on a typical case a few weeks ago for my friend Dr. ——.

The woman was delivered of a large child when sixteen years old, and was torn through into the rectum for over an inch, and the vaginal wall and the connective tissues were torn two inches further up. The operation was done about an hour and a half after delivery. Fifteen sutures were used in the vagina and the perineum. The vaginal tear was united by silk sutures and the perineal by silver wire and silkworm-gut, using only one silver wire as a base suture to hold together the ends of the sphincter muscle. The sanitary and hygienic surroundings were not good, and she had but little after-attention. She passed her urine, the vagina was washed out but a few times, and her bowels moved daily, after the second day. At no time was there any pus, and the entire laceration healed by first intention. When I called to see her on the twelfth day she was out of bed nursing her babe. In a final examination the perineum was found as perfect as before labor, with no disfigurement of the vulva. I select this case out of many, as the conditions were less encouraging than in any of the others. I have been so

uniformly successful that I now have but little concern about getting a good result if the woman will obey instructions.

If the operation is well done, I doubt the necessity of drawing the water or tying the legs. Nor is it necessary to wash out the vagina often. The urine and the lochia are not poisonous, especially after the second day, if strict asepsis has been observed in the operation. I have used a variety of sutures, including silver wire, silk, silkworm-gut, and catgut, but I am not prepared to assume any positive position in favor of one over another, if they are properly prepared. I have not used the kangaroo tendon, but I am told by my friend, Dr. Marcy, that it is more reliable than the catgut, never causes septic infection, and is easily absorbed, but retains its integrity long enough for strong union to occur. It is doubtful if the catgut will do this in complete ruptures, if used as a base suture, or to hold the ends of the sphincter muscle together. Then, the catgut is not always reliable, and sometimes causes septic infection. The silk suture would be as good as any were it possible for the tissues to absorb it. It can be buried in the tissues more easily than the catgut or the kangaroo tendon, but remains there to be encysted, or finally to slough out. The silkworm-gut is in many ways a typical suture, and may be used alone or with other sutures. If carefully used, it is one of the most perfectly aseptic sutures, but it cannot be absorbed, and is so sharp at the ends that it cuts the tissues as much as the silver wire. I have usually buried this suture, but was nearly always compelled to cut it out, as the sharp ends would finally protrude through the tissues and cause irritation and pain. The sutures should be buried in the ideal operation in aseptic surgery, but we should use sutures that will be absorbed when the parts have adhered with sufficient firmness to prevent separation. In complete ruptures I have always used a base suture of silver wire; but if the kangaroo tendon, or any suture that will be absorbed, will serve the same purpose in keeping the ends of the sphincter ani muscle in contact, I will adopt it.

In the secondary operation the patient must have preparatory treatment. Do not operate until the parts have healed. Have the woman in reasonably good health, purge her two or three times a day for nearly a week before the operation, and give her mainly liquid food that does not form much solid feces.

Just before the operation she should wash her entire person carefully with soap and hot water, and also wash out the vagina with a gallon of hot water. In cases where the cervix is abraded, so as to cause a profuse acrid discharge, it is best to treat this condition and not operate until the surface is nearly healed over. The operation should be done about one week or ten days after the menses. With one or two fingers in the rectum as a guide, in partial ruptures, the splitting may be done in five minutes. The knife should be introduced at the muco-integumentary junction, just in front of the anus, and pushed up under the tissues until they are divided as high up as is needed; then, by cutting deeply on each side, the muscles and fascia will be exposed. The outer line of the incision must follow the line that marks the junction of the skin and mucous membrane. If the rupture extends into the bowel, then the lateral incisions should go deep enough to expose the ends of the sphincter ani muscle, and be made on the sides just as in the incomplete cases. The recto-vaginal septum should be separated up a quarter to half an inch by carefully dissecting the vagina from the rectum through the connective tissue. Bleeding is not as troublesome as that following the superficial denudation, and can usually be quickly stopped by sponging, irrigation, exposure, or torsion, and, if necessary, by catch forceps; or a fine gut ligature may be thrown around the bleeding vessel.

Capillary bleeding does not delay the operation, for, if the parts are in perfect coaptation, the pressure will control hemorrhage, and union will not be interfered with. Where any form of an aseptic animal suture is used, the needle should be introduced, and brought out just within the lower or external edges of the raw surfaces, so that when they are united the suture will be concealed or buried in the tissues. Sometimes a few superficial sutures will be required. The sutures should be so introduced as to be entirely covered by the tissues, and to bring the surfaces into even and exact apposition. If the sphincter ani is ruptured, I always use the base suture after the fashion of Emmet. In incomplete ruptures the deep-buried animal suture, used after the fashion of Marcy, may serve an excellent purpose in the practice of an expert operator; and, where the splitting has been made extensive, the parts are brought more perfectly in apposition by using a continuous suture, or one or more

separate sutures at the bottom of the wound before introducing the deep perineal sutures.

In complete ruptures, three or four deep sutures will be required, and sometimes that number is required where the sphincter ani is intact. If the rent in the recto-vaginal wall extends up more than an inch, it is usually necessary to suture this part before introducing the perineal sutures, but the operation should be completed at one sitting.

When the tissues on each side and at the apex of the rent are deeply split, the recto-vaginal surfaces should be well separated, and brought together by one or more sutures, after the fashion of Mr. Tait in his vesico-vaginal fistule operations; or, if this cannot be done, the split edges may be united by interrupted sutures, or by a continued suture, so introduced as to be buried in the flaps, going into neither the vagina nor rectum.

This operation exposes and brings together the ends of the perineal muscles and fascia, and the fascia that holds the rectal and vaginal walls in position, and restores the perineum and the pelvic floor to nearly a normal condition, with about the same resisting power as before the injury occurred. In operating for incomplete ruptures with rectocele, the recto-vaginal septum should be split up to nearly the apex of the vaginal protrusion.

No tissue should be destroyed except jagged edges in some complete ruptures; the dissected part assists in protecting the wounded surface against the dangers of infection from uterine or vaginal secretions, and also increases the thickness of the perineum. I have never had a recto-vaginal fistule after an operation for complete ruptures, nor do I believe it will often occur if the operation is correctly done. It is immaterial whether sponges are used or the parts cleansed by constant irrigation with clean water. It will be observed that I do not allude to antiseptics, but speak of asepsis, or perfect surgical cleanliness. Weak solutions of bichloride of mercury or of carbolic acid would probably do no harm; but if we depend on their use and do not observe the laws of absolute cleanliness, our operations will not always succeed. I do not wish to inveigh against the antiseptic craze, for it has resulted in much good by directing the medical mind to the necessity of a rigid observance of all the laws of cleanliness; and the technique of surgical operations, even in minute details, has been wonderfully

perfected. Septic infection does not follow my operations, and I have but little fear of it so long as I continue to observe the rules that now govern me. I do not remove the deep base wire sutures for about one week, and allow the patient to get out of bed from the tenth to the fifteenth day. I have obtained equally good results by constipating the bowels and by allowing them to move daily, but I do not think it good treatment to constipate the bowels for from five to eight days, as was once the custom. In nearly every case I prefer to have a soft or a liquid stool each day after the operation, and especially after the third day. I could relate many interesting successful operations performed by me after the above fashion during the last six years, in complete and incomplete ruptures, illustrating the position I assume, but I am sure it is not necessary to do so.

THE PERINEUM; ITS ANATOMY, PHYSIOLOGY, AND METHODS OF RESTORATION AFTER INJURY.

By HENRY O. MARCY, M.D.,
BOSTON.

It may occur to some present that I have exhausted, so far as my ability, the subject announced upon the programme. I have called the attention of the profession, upon several occasions, to the injuries of the perineum and the methods which appeared to me best suited to its repair. The importance of the subject, and the differences of opinion yet held by many of the leading authorities, both in Europe and America, seem sufficient to make the theme one of marked interest to the profession at the present time, and especially fitting to occupy the attention of this Association, whose members are devoted alike to those branches of the profession which include the causes of the injury, as well as the means best adapted for restoration.

I review my own publications upon the subject with more than ordinary satisfaction, since they may be considered as progressive phases in the study of a problem which has occupied more than an ordinary share of my attention for a number of years, and to what I now offer in addition, although, perhaps, not conclusive or final, I invite your consideration and earnest criticism.

All good surgery must be based upon a thorough knowledge of anatomy, and while this is essentially true in the consideration of every operative measure, as, for example, the resection of a bone, or the ligation of a vessel, it is especially to be emphasized where the avowed object of the operator is the restoration of the injured parts to their former normal condition. This is the problem confronting the obstetric or gynecic surgeon, when he undertakes to deal with lesions of the pelvic floor.

The surgical anatomy of the male perineum may be said to have been practically demonstrated, and the subject long since exhausted.

It is a *sine qua non* to the graduation of every medical student, and properly so, because of the importance of such knowledge in the practice of every-day life; but if this is necessary to the proper consideration of diseases of the male, how much greater the need of a familiar and accurate understanding of the pelvic organs, their relationship, and supports in the female! Here, in addition to the lower segment of the alimentary canal and its outlet, the position and retention of the bladder with its efferent passage, are placed the complex organs of reproduction, which necessitates a third and the largest of the openings through the pelvic floor. Not alone should this give additional interest and importance to the careful study of the female pelvis and its contents when in the exercise of the ordinary functions of life, but especially when we take into consideration the physiological changes occurring during pregnancy and parturition—conditions so important and which occupy so large a share of the attention of the profession, and demand from its members often the exercise of the highest skill and ability. If, happily, the recovery from parturition renders danger to life no longer imminent, yet every practitioner listens to the almost daily complaint of suffering dependent upon injury of the parts involved, and the reflexive nervous disturbances resulting therefrom.

To those whom I am now addressing, it seems almost superfluous to make reference to these complaints, since the cases are so very common in which injuries to the vulvar outlet have caused years of semi-invalidism, overlooked by the superficial observer. This happened since there was no visible prolapse, and the proof of the correctness of causation is found in the fact that a permanent cure follows the restoration of the parts.

The description of the anatomical structure of the pelvic floor, in most of the text-books, appears to me faulty, and, on this account, much confusion occurs, not only in the use of names applied to certain parts, but especially in involving the whole subject in unnecessary complexity.

The comparison between the component structures of the male and female pelvis shows a closer analogy than is at first apparent. The levator ani in the male is inseparably blended with the sphincter ani. (Plate I., Fig. 1.) The transversus perinei in a central tendinous line joins with the levatores and sphincter in front of the anus; and anteriorly, between this point and the accelerator

PLATE I.

FIG. 1.

FIG. 2.

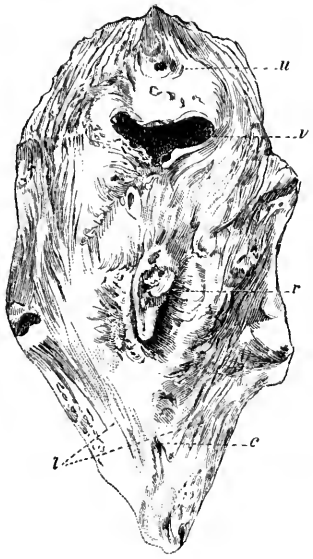


FIG. 1.—The perineal fascia removed, showing the transversi perinei muscles. They are seen to unite in a firm, central, tendinous raphé. Posteriorly are seen the mucous folds of the anus. (From photograph of a dissection for illustration of this paper.)

FIG. 2.—*u*. Urethra. *v*. Vagina. *r*. Rectum. *c*. Coccyx. *l*. Levator ani. The fibres may be traced descending from above the urethra, and uniting at coccyx to form a complete loop. The section is made just posterior to the transversus perinei. The perineal space between rectum and vagina is observed to be of considerable depth. (From photograph of a dissection made for illustration.)

urinæ and erector penis, there exists an irregular space, floored by the deep perineal fasciæ, called the triangular ligament of the urethra. This corresponds to the vaginal opening in the female. The accelerator urinæ or ejaculator muscle, separated in the median raphé, is not very unlike the sphincter vaginæ muscle. The erector penis and erector clitoridis are similar in position and functions. The transversi perinei are placed more obliquely in the male than in the female, and are often less well developed.

Since the dissections of William Hunter, undertaken to demonstrate the anatomy and the physiological function of the reproductive organs during pregnancy, the most valuable contribution to the proper understanding of the anatomy of the pelvic structures in the female are those of Dr. Henry Savage, of London. These studies, supplemented by the important teachings derived from frozen sections, greatly modify the previous views of the physiological relationship of the pelvic organs.

The depth of the perineum is less than usually described. The axis of the anus, cutting that of the vagina at nearly right angles, leaves in the external angle an irregular flattened portion of tissue rarely, when examined upon the living subject, more than one-half an inch in thickness. In the nulliparous woman this is clearly defined as a firm portion of the pelvic floor, and is composed of skin, fat, elastic and connective tissue, transverse muscles, sustaining fascia, and the anterior portion of the sphincter ani.

The vaginal side is usually slightly concave and the rectal side convex, owing to the interblending of the sphincter ani. If the finger be carried just within the perineum proper, and a little to one side, there can be felt the firm encircling band of the levator pubococcygeus, attached to each rami of the pubes above and descending to join with the posterior fibres of the sphincter ani and coccyx. In the perineum posteriorly this is firmly interblended upon either side with the transverse perineal muscles. These are under the control of volition, in considerable degree, and acting conjointly, serve to draw the vagina forward on to the pubes. (Plate I., Fig. 2.)

The parturient and fecal canals are supported in the pelvic basin in close apposition, and the functional relationship is often such that the one may encroach upon the other, in a way so as to occupy nearly all the space accorded to both. This is especially true in parturition, when the rectal space is reduced to a thin folded tube; and often,

in elderly women, the rectum becomes saccated, pushing forward the posterior vaginal wall, forming a considerable sized external tumor. The pelvic floor is so formed and blended about these openings, that it not only properly supports these tubes, but also materially aids them in their physiological function. In intimate relation to both are the bladder and uterus in their ever-varying functional activity, and each is surrounded by a delicate plexus of nerves and vessels.

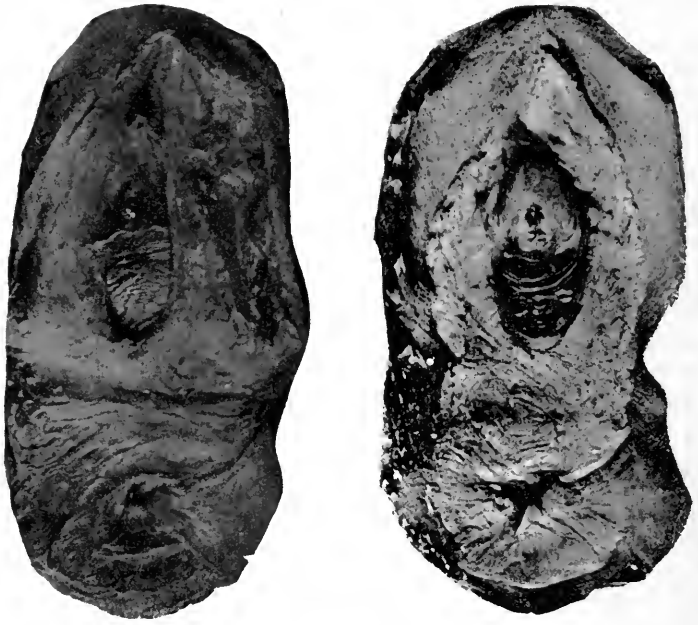
The sacral prominence throws a large proportion of the abdominal weight upon the symphysis pubis and the recti muscles, in the support of the body, and thus relieves the pelvic basin and takes off undue strain upon the pelvic floor. The rectum is rarely entirely empty, is circular in shape, serves the digestive apparatus, in a measure, as a constantly receiving reservoir, and, when not distended, may be felt from the vagina as a tube curving posteriorly. It is suspended and supported, slung—so to speak—by the levator ani muscles which hold the vagina in their encircling loops. On the contrary, the vagina, entirely unlike the early diagrams, is flattened antero-posteriorly upon itself, and in health its walls are, when at rest, ever in close apposition. The vagina joins with the vulva at right angles to its lateral opening, at the entrance of its passage through the pelvic floor. The vulvar organs are all intimately blended with, and go to form a part of, the perineum proper. On each side of the vaginal orifice are the erector clitoridis, the bulbo-cavernosus, and the transversus perinei muscles, and these with the levator ani make up, in large measure, the pelvic floor. The bulbi-vaginæ and Bartholinian glands are covered by these muscles with their erectile plexus of vessels, and abundant distribution of lymphatics and nerves.

The erector clitoridis and bulbo-cavernosus muscles, with the transversus perinei, join on each side to constitute the ovate muscular vaginal orifice, and, in their conjoined action, perform a very important physiological function in sexual congress, often underestimated or ignored. Their impaired function frequently underlies certain reflexive nervous conditions, distinctly pathological, which are easily overlooked, but are the cause of much suffering and unhappiness.

The much discussed, so-called perineal body has, in my opinion,

PLATE II.

FIG. 1. FIG. 2.



From photograph showing superficial fascia.

FIG. 1.—From photograph of dissections of the superficial fascia, made for illustration of this paper. The vaginal fascia blends behind the clitoris. Over the tranversus perinei it unites with the fascia encircling the anal folds.

FIG. 2.—The deep layer of the superficial fascia intimately connected with the transversus perinei.

misled some of our prominent authors into false positions, and caused great confusion and misunderstanding among physicians.

I have been criticised, in emphasizing the muscular floor of the pelvis, that I under-estimate the importance of the variously distributed connective tissue and fascia. This is not by any means my intention. The superficial perineal fascia, in its deep layer in the male, as well as in the female, covers and encloses the transversus perinei muscles, forming strong ligamentous transverse bands, uniting in the perineum, designated by Savage as ischio-perineal ligaments. (Plate I.; Plate II., Figs. 1 and 2.)

The pubo-coccygei, acting in unison with the other muscles of the pelvic floor, draw forward and thus aid, not only in closing the rectum, but hold both it and the vagina in the anterior curve, so important to be retained for the preservation of normal function.

A horizontal section, made through the floor, just above the sphincter vaginæ and posterior to the junction of the transversus perinei, shows the deeper fibres of the pubo-coccygeus, united in a loop behind the lower border of the rectum, holding it from the fixed point at the pubes, as in a sling. This loop is connected with the transversus perinei, bulbo-cavernosus, erector clitoridis, sphincter vaginæ and sphincter ani muscles by strong layers of connective tissue, the importance of which, for union and support, cannot be readily over-estimated. (Plate I., Fig. 2.)

Upon the posterior wall of the vagina, in its lower third, longitudinal muscular fibres are found external to the circular layer, and these intimately blend with the pubo-coccygeus, giving a firm support to the vaginal outlet quite as the outer longitudinal fibres of the rectum unite with the deep layers of the sphincter ani. The physiological action of the muscles thus grouped serve to draw the rectum forward toward the pubic arch and approximate it in close relation to the urethra, and this explains, in large degree, why the circular fibres of the vagina, left free to act in other directions, are intra-folded laterally, making in cross-section an imperfect figure H, first pointed out by Freund, in 1873. This intra-folding of the vagina, at right angles to the axis of the vulvar outlet, is very important in its relationship of support to the uterus and its appendages. (Plate III.)

One of America's most distinguished gynecologists, Dr. Emmet, takes exception to the possibility of the perineum and vagina serv-

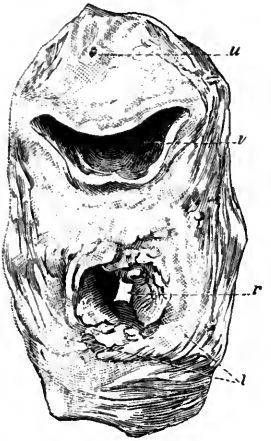
ing as a uterine support and that "it would be as rational to assume that a man's pantaloons were supported by the legs, resting on the instep or foot."

When we remember that the promontory of the sacrum is so placed in its relation to the pelvic basin, that the superincumbent abdominal weight is thereby deflected upon the symphysis pubis and recti muscles, we the better understand the protection given in a normal condition to the organs of the pelvis and their comparative state of rest, independent of the position of the body.

The vaginal axis is normally about parallel to the conjugate of the brim. The anal axis is nearly at right angles with the vagina and on a line with that of the uterus. The urethra, vagina, and rectum are disposed in curves corresponding to the sacral line. Architecturally considered, these are the lines and disposition of supports adapted to give the least outlay of power to retain the organs in position. This is the more to be emphasized, since the physiological function demands mobility of the organs in conjunction, and also each independent of the other. Viewed from this standpoint, a still further analysis of the vagina, as a column of elastic support to the uterus, is of interest and importance. (Plate IV.)

We have already observed that the circular loop of the muscular fibres of the pubo-coccygeus, posterior to the anus, carries the rectum forward on to the vagina and changes the vertical vulvar outlet into an antero-posterior closure of the vaginal canal, and that this again is thrown into two lateral folds. The longitudinal muscular fibres external to the vaginal muscle, and which extend, both in front and behind the vagina, along the distal third, are the chief causes in producing this intra-folding, constituting in large part the so-called columnæ rugarum. The letter H-shape, thus given to the vaginal column in section, is well known in the arts as the form adapted to the resistance of vertical weight. This elastic column, retained in its shape and position by its basic vulvar and perineal support, in its upper border is blended with the cervical tissues. The union thus made with the uterus is at nearly right angles to the vagina, and serves to hold the lower segment of the uterus backward, retaining that organ, like a ship at anchor, swung on its lateral supports, with freedom of mobility at its moorings. This vaginal support to the uterus is so effective, in the normal condition, that the cervix uteri is rarely displaced without there first ensues a

PLATE III.



u. Urethra. *v*. Vagina. *r*. Rectum. *l*. Fibres of levator ani. The section is made at greater depth than Fig. 2, Plate II., about one-half inch posterior to the junction of the transversi. The fibres of the levator loop are well marked. (From photograph of a dissection for illustration.)

change in the vagina. Although there are exceptions, of which the scope of this paper will not permit the discussion, the general consensus of medical opinion is that the changes which occur in the vagina usually commence with those lesions of the outlet and contiguous tissues dependent upon parturition.

A weakness in the base of support, the change of muscular action which causes a drawing upward and backward of the posterior vaginal wall, with an eversion of the vulvar outlet, produces a change in the axis of the vagina, bringing it and the uterus toward a common plane, and then the cervix, instead of being held at right angles, becomes a wedge in line with the vaginal outlet, separating its walls. This change in the position of the uterus causes the weight of the abdominal contents, deflected toward the pubis, no longer to fall upon the organ posteriorly, but vertically, and little by little, following the sacral curve in its descent, prolapsus, with varying degrees of retroversion, ensues.

The injuries of the retro-vaginal pelvic fascia, occasionally occurring in delivery, have been somewhat recently deservedly emphasized by Freund, Emmet, Baldy, Hadra, and others. The latter author considers that many of the ill results following delivery are due to injuries of the vaginal fornix and the upper portion of the parturient canal, and are consequently often overlooked.[1] "The impacted head, in its further progress, tears loose the upper portion of the anterior vaginal wall from the bladder and from the anterior surface of the cervix, turning it into a loose pouch which the bladder will have to follow on account of gravity." This, he believes, is the more common cause of cystocele. Hadra has devised certain plastic operations (resections of the upper portion of the vaginal canal) to remedy these injuries.

In a similar manner, the vagina posteriorly is caught in a fold and protrudes, as a ring, before the advancing head, and in the eversion thus produced it has been assumed, rather than demonstrated, that the posterior folds of the pelvic fascia are sundered, and that the result of the injury may be prolapse with rectocele and deep lateral sulci. Such injuries very probably occur and enter into the sum total of possible damage, but to differentiate and emphasize them as independent of the various muscles which it is

[1] Hadra: The Medical Register, vol. i. p. 611.

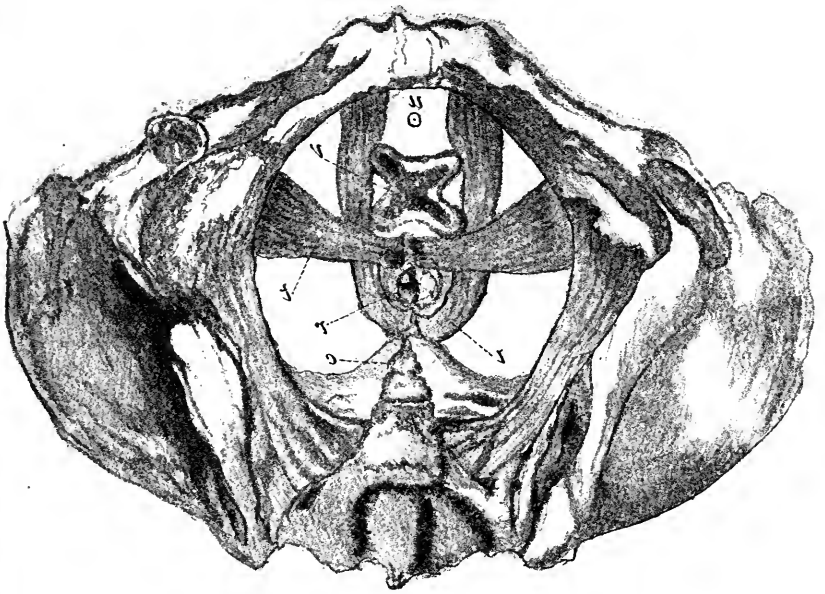
their office to hold in proper relation and support; moreover, to base important surgical operations upon their assumed restoration, is misleading and unscientific. In a sense, muscle and fascia are equally important, since the one fails in its function without the support of the other.

If the anatomy and physiology of the pelvic floor have been correctly described and interpreted above, there takes place, in normal parturition, a retraction or drawing upward of the bladder before the descending head, rendered possible by its loose suspensory ligament, until the occiput passes below and is allowed to escape anteriorly to the symphysis. The perineal muscles relax and descend in a more or less encircling loop, the pressure upon which is not lessened until the occiput escapes. This is not the place to enlarge upon the physiology of parturition, but the above view, especially emphasized by Drs. Simpson and Hart, of Edinburgh, is important in its practical bearing upon the so-called support of the perineum in delivery, wrongly taught in many of the standard text-books. I believe injuries to the perineum are often caused by the earnest but misdirected efforts of the accoucheur, in the attempt to preserve the tissues intact.

I have carefully reviewed our present knowledge of the anatomy and physiology of the pelvic floor, since all attempt at a restoration must, in a large measure, depend upon our understanding what we mean to restore. It should be taught, as cardinal, that the obstetrician has not completed his duty to his patient until he has carefully examined, in a good light, the vaginal outlet. There is still considerable difference of opinion whether an attempt at immediate repair is advisable. This has been questioned, since the bruised and raggedly torn tissues seem unsuited for primary union, and the lochial discharges liable to infect the wound.

Antiseptic midwifery, however, has abundantly demonstrated the error of such conclusions. When the parts are maintained aseptic, the union rarely fails; and if, by any reason, this should not take place, the patient is none the less fitted for subsequent operation. The torn tissues are very vascular, extraordinarily developed in preparation for the parturient act, and paralyzed, in a measure, by the extreme tension to which they have been subjected. All this favors a rapid plastic repair. There can be little doubt, the time is not far distant when the patient will rightfully demand of the

PLATE IV.



The outlet of the pelvis with its ligamentous attachments, showing the relations of the levator loop and transversi perinei muscles (diagrammatic). *u.* Urethra. *v.* Vagina. *r.* Rectum. *c.* Coccyx. *l.* Levators. *t.* Transversi perinei.

practitioner as rigid care in this respect as in any other part of her supervision.

The primary operation is comparatively simple and often will not require an anesthetic. A solution of cocaine is frequently of service. Under irrigation with sublimate solution, the vaginal vault temporarily lightly tamponed to retain the uterine flow, with one or two fingers in the rectum, I unite the parts with a deep continuous buried tendon suture. The torn muscles are not retracted and lie easily in apposition. The deep sutures are limited to the perineum, and should be so placed as to be covered by the superficial vaginal line of union, and are four or five in number, taken with the double continuous stitch hereafter described. More recently, I have further modified the operation in the superficial layer by commencing at the upper angle of the wound, closing it with a tendon suture applied as a blind stitch. This is best effected by a straight Hagedorn needle, lightly but accurately piercing the connective tissue, beneath the mucous membrane, from side to side. The sewing is continuous in the same way over the fourchette posteriorly to the limit of the division of the skin. Thus the divided edges are brought evenly into apposition without the vestige of a stitch in sight. The parts, carefully dried, are dusted with iodoform and covered with iodoform collodion. The tampon is replaced by a light packing of iodoform wool, and, if the operation is done aseptically, the repair goes on as in a subcutaneous wound.

If the rupture extends through into the rectum, the lower bowel having been well washed with sublimate, care being exercised not to allow its retention, and tamponed with iodoform wool, the rectal mucous membrane is closed with great care, the stitches being taken continuously as above described. The sewing is carried to the anal opening and the suture left uncut. When drawn sufficiently tense it becomes a buried suture, and the rectal mucous membrane lies in close apposition. The operation is then continued as in incomplete rupture, the deep double suture (the Marcy stitch) also carefully inclosing the divided sphincter. When the edges of the two anterior sides of the triangle have been coapted by the buried suture, the end is joined to the rectal suture in front of the anus. Although I have usually retained the united parts at rest without strain for some days, by means of a lateral support, as a sort of splint, with

parallel pins applied in halves and joined like a safety-pin (previously elsewhere described[1]), in a number of instances I have omitted this support and complete union followed without pain or even edema of the parts.

The operation is to be commended for its simplicity in application, the comfort of the patient, as well as assurance of result. A word of caution may be required that the sutures are not drawn too taut, since retention in easy apposition is to be sought, and constriction of tissue avoided, as even in an aseptic wound injury must otherwise result.

Operations undertaken for the restoration of the perineum, a considerable period having elapsed since the injury, are quite different from primary operations. Here almost always certain secondary changes of adjacent organs have supervened, and, on this account, the patient seeks the aid of the surgeon. Thus, new and often difficult factors enter into the problem, and these generally vary to such a degree that each case must be carefully studied as a personal equation.

Perineal lacerations usually commence at the posterior commissure, and may extend even through the recto-vaginal septum. They vary in all degrees, but, for convenience, are divided usually into complete and incomplete ruptures, the former including an opening into the rectum, involving the sphincter ani. Lack of symmetry is usual and results from a lateral deflection of the rupture, the posterior columna rugarum usually remaining as a much thickened projection, often overlapping the side of the lesion.

The pelvic floor, viewed from within, presents a series of inclined planes sloping toward the anus, the general function of which, beside furnishing a strong elastic support, is best described by the name given to the larger group of muscles by the earlier anatomists —levatores ani.

There is a large class of injuries to the pelvic floor incident to childbirth, usually overlooked or under-estimated, because the external orifice shows no material damage. These concealed injuries are due frequently to a submucous tear of the transversi, a rending of the pubo-coccygeus from its posterior perineal attachment, and may be continuous through the vagina up the lateral sulci, leaving the columna rugarum free upon one or both sides. (Plate IV.) It

[1] American Medical Association Journal, October 27, 1883.

PLATE V.

FIG. 1.

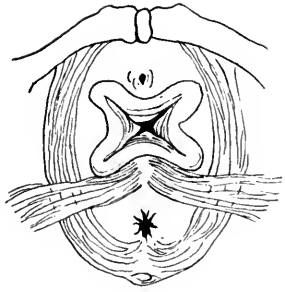


FIG. 2.

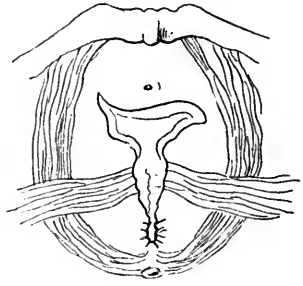


FIG. 1.—Diagram showing the relation of the uninjured muscular attachments of the levator and tranversus.

FIG. 2.—Showing a central lesion, the transversi slightly separated, the levator loop weakened in its support causing a relaxation of the posterior wall of the vagina. If complete, loss of septum.

FIG. 3.

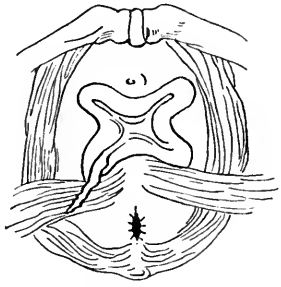
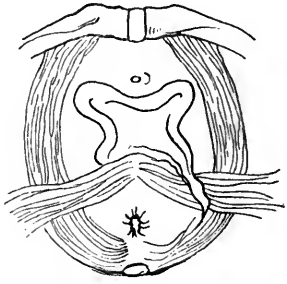


FIG. 4.



Figs. 3 and 4 showing lateral rents separating the transversi, with more or less injury to the levator loop.

is exceptional that the injury is symmetrical, usually extending higher upon one side than the other, and it may even reach into the posterior fornix. These inside lacerations usually begin from above, before the advancing head, and generally do not involve the rectal tube, since this is merely compressed laterally, and comes into tension by the strain upon its anterior and lateral attachments which are the site of actual injury. On the contrary, lacerations of the sphincter are usually produced by the over-tension on the median line posteriorly causing a rupture in the raphé, which extends backward into the rectum. (Plate V.)

There is a series of severe injuries where the vagina shows no evidence of lesion, and, although these are generally ascribed to over-strain or distention at labor, followed by relaxation and weakening of support, a deep post-vaginal injury to the muscular groups can usually be demonstrated. The finger no longer feels the firm ridge of the transversi muscles closing the vulva posteriorly. The pubo-coccygeus is felt as a large open loop, passing obliquely backward into the pelvis, changing, in a marked degree, the plane of the pelvic floor. A careful study of the differences between these and the normal conditions renders this injury readily recognizable. A perineum may seem to be deep, because of the loose relaxed condition of the parts, but the transversi uninjured are tense, and therefore may appear shallow. When the upper portions of the levator loop are uninjured they may, in a measure, retain the pelvic organs in position, but, by the increased strain and tension, produce much suffering. Often, on this account, operative measures may be required.

In deeper ruptures, accompanied by rectocele, the posterior vaginal wall, on the contrary, is much thinned and the mucous rugæ disappear. Carefully examined, cicatrices usually extend much beyond the ununited parts, showing that a limited repair took place after the injury. Often bridges of cicatricial tissue make an imperfect repair of what, otherwise, would be a complete rupture; the radiating folds of the anus are retained only posteriorly. The rectal mucous membrane everts anteriorly in a thick, soft fold, sometimes appearing as a small tumor. When the injury is severe, the transverse muscles of the perineum are separated at their union in the median line, and contracting toward their origin, draw apart the injured surfaces, and the levator loop no longer presses the

rectum forward upon the vagina, but, loosened from its central support, is changed in its plane of action, and causes eversion of the posterior portion of the vagina. (Plate V., Fig. 2.)

A careful review of the surgical procedures adapted to repair the injuries of the pelvic floor, leads us beyond the limits of this occasion, but forms a chapter of exceptional interest. The time involved, the thought expended, the ingenuity and fertility of resource, to meet and group the different factors, as they appear to the varying consideration of special students, generally writers of much eminence in the surgical domain, all teach the importance and difficulty of the problem.

Celsus clearly recognized the injuries incident to parturition, advised rest in bed and tying of the legs, but gave no suggestion of surgical repair.

Ambrose Paré pointed out the applicability of sutures, and his pupil Guillemeau restored the parts, applied the interrupted suture, and effected a cure. At the close of the last century Saucerotte and Noël each succeeded in a single case, using the twisted suture.

Dieffenbach, surgeon to the Charity Hospital in Berlin, in 1829, gave much attention to the injuries incident to labor, and his method of repair finds recognition in the text-books of to-day.[1] "After a most deliberate and careful investigation, Dieffenbach concluded that suture alone would not supply any certain mode of remedying perineal lacerations; and, among others, he laid down the following rules of practice: 1. That prior to the operation the bowels should be well cleared by purgatives and enemata. 2. That despite the swollen state of the torn parts, the presence of discharges, and the debility of the patient after delivery, the operation should be performed as immediately as possible after the accident, since those evils would be more than counterbalanced by those consequent on delay, as suppuration, sloughing, and loss of substance, and the yet later results, displacement of the uterus and associated organs. 3. That no rupture, however slight, should be left to nature, for the healing would be superficial, and the vulva enlarged, proportionably to the extent of laceration, by the retraction of the labia toward the anus, the support of the pelvic viscera being also thereby diminished. 4. That three to five sutures are necessary, according

[1] Baker Brown: Diseases of Women. First edition, 1854, p. 13.

to the severity of the accident; the insertion of the sutures commencing at the anus, and, where the sphincter is torn, the first being applied at its angle. 5. That where the perineum is lax, either the twisted or interrupted suture may be used, and, when the vagina is implicated, its fissure should be first brought together; also, that where the perineum is tense and rigid, an elliptical incision should be made on either side the median line, and equidistant from it. 6. That in those cases where there has been considerable loss of substance, the transplantation of an adjoining piece of integument may be resorted to—*i. e.*, a plastic operation may be attempted. 7. That in cases of old standing, the edges of the fissure require to be pared before being brought into apposition by sutures. 8. That after the operation the bowels should be bound by the administration of opium, in doses of one-third of a grain twice a day, and that the urine should be regularly withdrawn by the catheter." Lateral incision to relieve tension and confining the bowels by opium are the most noteworthy of his directions.

Chelius, on the contrary, advocated keeping the bowels loose during the process of repair. This seems to have been the common practice, until Baker Brown revived, in this respect, the teaching of Dieffenbach. The next most important contribution that has come to my notice is that of Langenbeck, described in a memoir published in 1852, by M. Verhaeghe, of Ostend:

"Operation[1] immediately after the accident is advocated, but the description given of the proceeding applies to old cases, since in recent lacerations it is only necessary to bring into apposition the divided tissues to restore the perineum. The operation may be divided into several stages, viz.: 1. Vivisection of the free border or spur (éperon) of the recto-vaginal septum. 2. The undoubling (dédoublement) of the septum and the formation of a flap destined to form, in the new perineum, the anterior side of the triangular space formed by the two canals, vaginal and rectum, with the perineum as the base. 3. The vivisection of the two lips of the laceration. 4. The insertion of the sutures. 5. The two semilunar incisions advised by Dieffenbach." "In order to pare the free edge of the septum, two fingers of the left hand are introduced into the rectum so as to stretch the parts transversely; then by means of scissors a

[1] Baker Brown: Diseases of Women, 1854, pp. 23, 24.

very thin lamina is removed from the entire thickness of the spur. This done, the two fingers in the rectum keeping up tension of the septum, a nearly semicircular incision is made on the anterior surface of the latter, and two or three lines from its inferior border. The upper lip of this incision is next to be seized by forceps, and separated by careful dissection from the deep layer for the space in length of six lines, and in the entire breadth of the septum. Thus two laminæ are formed, one anterior or vaginal, the other posterior or rectal; the latter destined to continue *in situ* to close the rectum, the former to be drawn forward and fixed by its angles at the anterior part of the new perineum on each side. It will thus form an inclined plane, directed from behind forward, as a sort of valve, which will act with reference to the new perineum as the epiglottis does to the glottis; that is to say, it will prevent the fluids of the vagina coming in contact with the newly united parts.

"The vivisection of the two sides of the laceration is the next object. To do this a quadrilateral space, rather elongated anteroposteriorly, is to be circumscribed by the scalpel, from the vulva toward the anus, avoiding the mucous membrane of the vagina above and the skin below. In front the incision must not pass beyond, nor yet stop short of the point where the posterior commissure of the vulva naturally exists; behind, it should connect itself with the corresponding side of the pared edges of the spur; no portion not pared should exist between them. In general, this quadrilateral space should be an inch and a half long, by three-quarters of an inch wide.

"This space having been accurately pared, and bleeding having ceased, next comes the introduction of the sutures. The suture intended to close the rectum is the first introduced, by a curved needle carrying a double thread. The needle should pierce the skin to the left of the anterior margin of the anus, and from four to five lines from the edge of the wound, so that it may come out on the denuded border of the spur of the septum, at the distance of about two lines to the left of the central line; it is then to be plunged into the same border, at an equal distance from the median line, and to be brought out at a point corresponding to that at which it was first inserted on the opposite side. By drawing this thread, the opposite pared edges are found to approach in the median line and thus close the rectum. This ligature thus drawn, being entrusted

to an assistant, the other sutures are to be introduced. The posterior suture is the first inserted, and about four lines should be left between any two. The needles should penetrate the flesh from four to six lines from the margin of the wound, and emerge at a corresponding point on the opposite side, being kept clear from wounding the mucous membrane of the vagina.

"The next step is to fix the lamina derived from the septum. For this object small curved needles with a single thread suffice. This flap being fixed, its purpose becomes evident. It acts as a vaulted roof to the essential parts of the operation, obliging all the original secretions to flow toward the vulva without infiltrating in the interstices of the united fissure. In other words, it reconstitutes the anterior wall of the triangular space seen in the normal perineum. The sutures of the perineum are now drawn tight. Lastly, the incisions of Dieffenbach may be made, as they serve materially to obviate dragging on the united parts by movements."

I have made transcript of this method in detail, since there are two features in the dissection and apposition usually attributed to more recent surgeons. In previous publications upon this subject, I have given credit to Dr. Jenks, of Detroit, as the originator of the method of flap dissection which I used in my earlier operations; the purpose, I supposed, having been that of Langenbeck's operation, viz., to protect the wound from the vaginal secretions. It will be seen by quotations later from Dr. Jenks' own article, that he does not claim this as a part of his method, since he removes the flap entire after dissection. The other feature to be emphasized is the lateral splitting of the edges of the parts to be coapted—"undoubling." This method is attributed by Drs. Hart and Barbour[1] to Prof. A. B. Simpson, by Zweifel[2] to Lawson Tait, and which I published in 1883 as a device of my own, unaware of its use previously.

Baker Brown published his method in 1854, advocating the dissection of Dieffenbach, the use of deep quilled sutures, and the bilateral division of the sphincter ani. This latter measure he thinks of the first importance in severe cases. The diet is kept very light, the knees close together, the urine drawn by catheter, opium is used freely, and the deep suture removed usually about the fourth day.

[1] Manual of Gynecology, Hart and Barbour, p. 517.
[2] Cyclopedia of Obstetrics and Gynecology, vol. xii.

In the further development of the operation, Simon's modification of Dieffenbach's comes into consideration. He carried the denudation up the vaginal vault—posterior colporrhaphy—over the region of the perineal cicatrix, in the shape of a triangle. This was first closed, and then the operation continued as by Dieffenbach. In complete ruptures, he applied sutures in three directions, crossing in the perineal space. The perineal sutures were removed the third day; the vaginal and rectal later, often remaining ten or twelve. All sutures used were of silk.

Little by little, in modification of the above method, the dissections were extended more and more up, and laterally into the posterior folds of the vagina, notably, by Hildebrandt and Hegar. Kaltenbach and Hegar adopted, in complete ruptures, the closure by stitches, taken in three directions from the perineal centre as the point of departure, the vaginal sutures being the deep ones, the others superficial. Kaltenbach carried the denudation even into the vaginal cul-de-sac.

One of the most important contributions to the surgery of the early part of this generation is conceded as American, and due, in large measure, to her favorite son, sometimes called the Founder of Gynecology, Marion Sims. The history of surgery teaches the use of metallic sutures, in the cure of hernia, two centuries ago. Mettauer, of Virginia, first used and commended metallic sutures (lead) in 1830. Iron and silver wire followed, and came into general use for many purposes after the demonstration of the cure of vesico-vaginal fistula. In the Woman's Hospital, in New York, Sims, Emmet, and Thomas, with able assistants, many of whom have since become famous, worked out the problem of their adaptation to the plastic repair of the vaginal tract. The great value of the wire suture was found in its non-irritating qualities. This, in wounds usually septic, was a great advance. They could remain for a much longer period, but, in an aseptic wound, they offer no advantage over silk or other material, and are often troublesome to remove.

To Dr. Emmet is due the introduction of the method which is the one most generally practised in America. The two points most important that he presents, are the denudation and the introduction of the first stitch (wire) through the sphincter ani. He states: "that if we examine carefully an old complete laceration, upon each side, there will be found a little depression or pit, which I

attribute to the contraction of a portion of the sphincter ani." This marks its point of laceration, and should be very carefully refreshed. In contraction the fibres are so separated that, in the way too often sutured, the inner constricting bands are not inclosed, and thus retract with, at best, a weak union. The stitch should be deep enough to include all the fibres. This is an important point, and should always be kept in mind. In perineoplasty for rectocele, as well as restoration of the perineum proper, Dr. Emmet modifies the dissection of the mucous membrane, so as to include the deep lateral sulci. These are united in an irregular V-shape. In 1883, Dr. Emmet published his new operation for so-called laceration of the perineum. Since I have elsewhere criticised[1] this operation, I extract from the articles of Drs. Jenks and Coe.[2] Dr. Jenks writes: "In this paper, he holds that the loss of support following the laceration produced by childbirth is not due to the injury of the perineal body. In fact, he denies the existence of any such body, and claims that the injury is due rather to the detachment of perineal muscles and the perineal fascia. The description of this operation by the author is by no means lucid, but it substantially consists in a semilunar form of denudation, wholly within the vagina, of such extent that when the edges are brought together by means of sutures, the 'slack' in the posterior wall is entirely taken up or made to disappear, and yet the ostium vaginæ is in no way denuded or directly interfered with. The advantages claimed are, great diminution in the discomfort following immediately after the operation, and the perfect juxtaposition of the anterior and posterior vaginal walls, as in the non-parous woman."

Dr. Coe[3] states, "Although Dr. Emmet was not the first to affirm the insignificance of the perineal body as a support, he has deduced the practical lesson that laceration of the perineum alone impairs but little the integrity of the uterine support, whereas, overstretching or tearing of the fascia or muscles (levatores ani) of the floor at their attachment to the vagina, as the result of parturition, at once disturbs the delicate adjustment of the pelvic organs. This theory, so correct logically, has, unfortunately, not yet received confirmation through careful dissections. Assuming that the injury in such

[1] The Physician and Surgeon, May, 1887.

[2] American System of Gynecology, vol. i. p. 55. [3] Ibid., vol. i. p. 234.

cases involves the deeper tissues, and that it is not repaired by closing the perineum alone, it remains to inquire if the new operation proposed by Dr. Emmet does fulfil the indications. Granting that the tissues of the pelvic floor are lacerated, does the operator reunite the torn ends by passing his sutures blindly through the posterior vaginal wall, or is the operation simply a modified posterior colporrhaphy, the ultimate result of which is simply to narrow the vagina by the removal of redundant tissue?"

Dr. Dudley also seems to appreciate that Dr. Emmet may fail in the closure of the deeper layers of the sundered structures, and has added several deep perineal sutures after the method of Simon.

Dr. Wylie has modified Dr. Emmet's operation.[1] "Commencing from below, a strip of mucous membrane as wide as can be conveniently cut is snipped off, following the line of junction of the skin and mucous membrane from the level of the inferior caruncle on one side, to the same level on the other. We then denude all the posterior surface of the vagina up to this level, till we reach the beginning of the sulci running on either side of the rectocele. The part of the operation requiring the greatest judgment has now come. Our object is to unite the vaginal walls above the sulcus on one side with the corresponding portion of the vaginal wall on the other side, so obliterating the sulci and forcing back the rectocele. If we carry denudation too high, we shall find it difficult to bring the two sides together without undue tension. If we are too timid, our support will be insufficient, and the operation will be but a partial success. The proper level having been determined, we continue the denudation upward till we reach the points in the vagina which we marked out as the limits of tension from the apex of the rectocele. This will usually be about one and a half inches from the orifice. In denuding this portion of the vagina we still work from side to side, carrying the strip of mucous membrane down into the sulcus, and up to the level we have marked on the other side. In doing this we should not cut very deeply and preserve as much as possible of the muscular substance of the wall of the vagina over the rectocele, but afterward we should go over the work in the sulci, removing all tissue till we come to the fibrous external sheaths of the vagina. In this way, we hope to preserve a firm muscular

[1] The Medical Register, vol. ii. p. 196.

coat over the rectocele. When we are through, the denuded surface will be nearly square, or if the rectocele be very large, parallelogram, the greatest length being transverse to the axis of the vagina. All bleeding should be controlled perfectly by pressure and torsion, but if necessary catgut ligatures may be used, and the parts washed thoroughly with some efficient antiseptic."

This method of posterior colporrhaphy is important chiefly in that Dr. Wylie cuts away, by a second paring of the parts, laterally the vaginal muscle. He also emphasizes the stretching of the sphincter ani, in order to relieve tension and discomfort from rectal distention. He uses the interrupted suture, tightening from below upward, being careful that the needle is buried when it passes under the angle of the sulcus.

In Germany the first notice I find of the use of *animal sutures* in perineorrhaphy is by Bröse, in recent lacerations, in 1883.[1] He commended catgut treated with a corrosive sublimate solution and preserved in absolute alcohol, rejecting that prepared after Lister's method.[2] Schroeder used, in perineorrhaphy, with much satisfaction, catgut soaked eight days in a 1 to 1000 sublimate solution and then preserved in juniper oil. Doléris[3] published his experience and advised knotting the thread from time to time. He states, "the catgut is absorbed in seven or eight days." Last year, when here at the International Medical Congress, he informed me his experience continued satisfactory.

Dr. Martin, of Berlin, reported[4] twelve cases in which he used the continued catgut suture with good results; since this time he has continued its use. When the wound surface is very large he coapts in layers, as did Schroeder, and thus buries one line of the sutures. He commends this practice as very satisfactory. He refers to Werth, as having published, in 1879, the advocacy of the use of catgut as a deep suture. Dr. Martin's method of denudation is a modification of Freund's operation. Both leave the columna rugarum and resect in a lateral direction, as thought sufficient to restore the normal vaginal lumen.

Bischoff's method is interesting in that he revives the flap opera-

[1] Centralblatt für Gynäkologie, 1883.
[2] Ibid., July 15, 1885.
[3] Archives de Tocologie, Feb. 1885.
[4] Deutsche med. Wochenschrift, No. 2, 1886.

tion of Langenbeck, but reattaches it laterally. He, like Langenbeck, limits the dissection to the removal of the mucous membrane.

Lawson Tait, in complete ruptures, has recently also modified the Langenbeck operation. He removes no tissue and operates with scissors. His sutures are inserted in the axis of the wound and surround and bring together large surfaces. The suture should not appear in the rectum, and only the knot should show in the vagina. Two stitches are always sufficient, are of silk, and generally are removed the tenth or twelfth day.

Heppner devised a suture for securing equable pressure. It is a figure of 8 in shape and possesses certain advantages.

Hadra, of Texas, has recently contributed a series of interesting articles[1] upon the lesions and restoration of the pelvic floor. After a careful review of the operative measures commended by various authors, he criticises most of the methods, as in certain respects defective. First, that operations for posterior colporrhaphy are made upon the denuded vaginal muscle and are not resections of the vagina, as in anterior colporrhaphy, now generally recommended. His query is pertinent, since if for the anterior portion of the vaginal tract resection is best, why not for the posterior? Again, he places much emphasis upon the vaginal vault or fornix and he has devised some ingenious resections as modified posterior colporrhaphies.

Although this review is necessarily brief and imperfect, many excellent suggestions and changes in operative procedures by distinguished men having been omitted, I have endeavored to sketch the outlines of thought which lead up to the present accepted modes of surgical repair. We have seen, with one or two exceptions, that the tissue removed is limited to the mucous membrane, whether the operation is upon the perineum proper, or a posterior colporrhaphy. In operations for incomplete ruptures, more or less complicated with rectocele and prolapse, the method, with the exception of Wylie's, consists of an intra-folding of the muscular wall of the vagina in varying pattern.

The groupings of the muscles sundered at the perineal raphé and more or less widely separated are, in attempt, included by deep sutures, taken in every manner of direction, while every material used in surgery for sutures finds its advocates.

[1] Medical Register, 1887.

In the earlier part of this paper, I endeavored to show the anatomical relation of the parts when normal; the more exact conditions of the structures as usually found after injury, and their perverted physiological action, producing various degrees of suffering. We found that the changes in the vaginal structures were generally not due to a primary injury of this muscle, or its mucous covering, but to the secondary forces brought to bear upon it, called into action by the modified relations of the muscles of the pelvic floor; the transversi perinei no longer supporting and holding in place the other groups, but, on the contrary, retracting toward their origin and thus everting the vulvar opening; the levatores ani, not able to act as a suspensory band, pulling forward and closing the vaginal canal, but, on the contrary, freed from their central moorings, drawing the anus upward and backward. These, of course, are accompanied by changes in vascularity and innervation, by weakening of the various layers of the pelvic fascia, by absorption of the fat and elastic tissue, by defective action of the bulbo-cavernosus, erector clitoridis, and sphincter vaginæ muscles, by consequent imperfect circulation in the erectile tissues, and perverted glandular secretion. The ultimate effects are a bladder weakened in support, a distorted rectum, a displaced uterus, each factor adding to the other, until the sum total of discomfort renders life often a grievous burden.

In June, 1883, at the meeting of the American Medical Association, I read a paper upon the restoration of the perineum by a new method, which was published in the *Journal* of the Association the following October. In this, I advocated the dissection of the portion to be restored by a flap, the lower border of which only is separated. This dissection I made after the manner of Dr. Jenks, of Detroit, with two modifications which seemed to me essential; first, making the dissection as deep as possible, without its being retro-vaginal, and then retaining it *entire*, instead of dissecting it away as recommended by Dr. Jenks. He says,[1] "I use neither tenaculum nor tissue-forceps, but with the parts tense, snip a hole in the mucous membrane in the median line, close to the integument, and then inserting the scissors with a cutting motion into the small hole made, I continue to dissect the mucous membrane away

[1] American Journal of Obstetrics, 1879.

from adjacent tissues without removing the scissors, first going up the septum as far as desired, and then laterally, first on one side and then on the other, without removing the scissors or once bringing their points from beneath the mucous membrane. Then, with blunt-pointed scissors, I cut away the dissected flap."

This anterior flap I utilized by coapting its inverted Λ-shaped freshened surface, and united the lower sides of the triangle, the perineum proper by lateral supporting pins[1] (Plate VI., Fig. 1). "This is effected by means of a double pin, the halves of which are nearly alike. The pin is made of German silver wire, gauge No. 20 or 22, since this material does not irritate the tissues and possesses stiffness and elasticity, qualities which are essential. The end is bent in a small loop and turned one-fourth of an inch therefrom at a right angle, and the shaft is two to two and a half inches in length, sharpened like the point of the needle of a subcutaneous syringe. The one half is introduced from the vagina, *within* outward, quite deep into the tissues laterally, the direction being determined by the finger placed in the rectum, to which the pin should be parallel. The other half of the pin, similarly constructed, is introduced from *without* inward upon the opposite side in the same manner, the point of which is caught in the loop of the first part and adjusted without. Thus a kind of 'safety pin' is constructed, and, when fitted to retain properly the enclosed portions, the loops are clamped down by compression forceps and the ends cut square. This is found to hold sufficiently firm; but at first, fearing it might not be secure, I also clamped a perforated shot upon the wire. The shot renders the end of the pin less liable to cause irritation. If properly adjusted, the elasticity of the wire compensates for the collateral edema, and does not impair the circulation in the inclosed parts, while complete approximation is obtained, and no force is exercised in the direction of the long axis of the triangle. Two to four pins are required as the case may demand (Plate VI., Fig. 2). The subsequent treatment consists, in most instances, of a daily washing out of the rectum by means of a large double rubber tube with a considerable quantity, usually from three to four quarts—of water as hot as comfortable to bear. Upon the eighth or tenth day, as thought wise, each pin is gently pushed upward and

[1] American Medical Association Journal, Oct. 27, 1883.

PLATE VI.

FIG. 1.

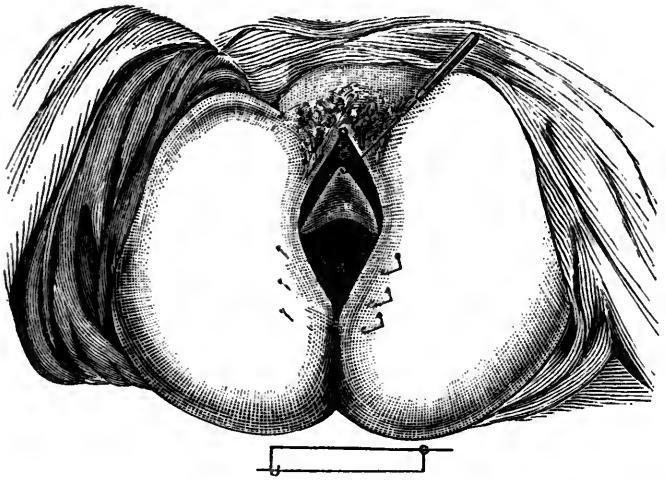


FIG. 1.—Represents the separation and uplifting of the posterior vaginal wall. The pins are already inserted ready for coaptation and fixation by clamping.

FIG. 2.

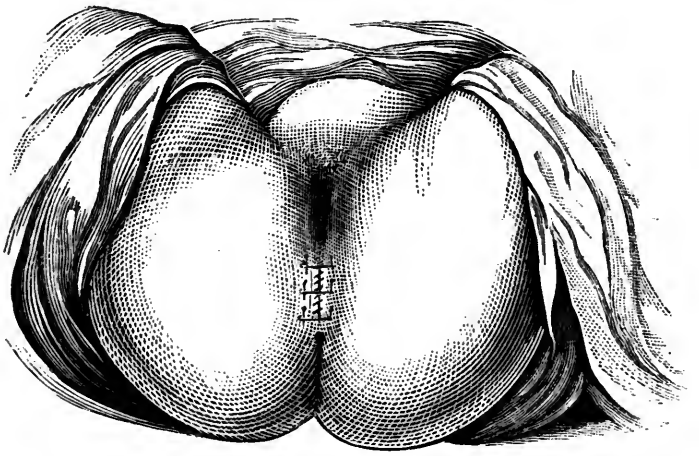


FIG. 2 shows the operation completed, and the careful adjustment of the edges by a fine continuous animal suture.

the vaginal end exposed. Each side is then cut off near its juncture and withdrawn."

The object of this support is to do away with the distortion and puckering of tissue inherent to the deep wire suture, and prevent all strain upon the enclosed freshened surfaces. In this paper I also emphasize the fact that, in cases of complete rupture, I divide the refreshened sides of the rent *laterally*, and close with a *continuous animal* suture, so as to make the double V, or diamond ◊ shape of the parts to be coapted, as in incomplete rupture.

At the Eighth International Medical Congress, held in August, 1884, at Copenhagen, I contributed a paper still further setting forth the views I then held, and, with slight modifications, advocated the above described method, using *tendon* from the tail of the kangaroo instead of catgut. In May, 1887,[1] I published a further contribution to the study of perineal injuries and the restoration of the pelvic floor. In this article I advocate a modification in the dissection, in that I carefully find and separate the posterior third of the vagina, not its mucous membrane, from the more or less deformed perineal structures. "My dissection is to separate the vaginal muscle from its pathological relations, and is continued so as to reach the lateral sulci, and, in its closure, not only is intended to, but does overcome the patulous condition of the introitus vaginæ in cases of great relaxation. . . . . A curved needle, threaded with tendon or catgut, is introduced into the bottom of the wound, and then it is carried carefully, in deep suture, from opposite sides of the *lateral sulci*, behind the vagina. The posterior vaginal space being thus approximated, the same suture is continued deeply into the *retracted* ends of the transversus perinei, and tied without extending externally. This, of course, is intended to remain as a buried suture, and subsequent success is dependent upon its aseptic condition. More recently, I have threaded each end of the tendon, and introduced the needles from opposite sides, thus making a double stitch. . . . In a number of hospital cases well selected, the patients under careful supervision, I have omitted the pins, trusting to the deep buried suturing. At present, I do not feel safe in commending this practice generally, but if trustworthy, it will be a manifest gain to both patient and surgeon."

[1] The Physician and Surgeon, vol. ix. Nos. 5 and 8.

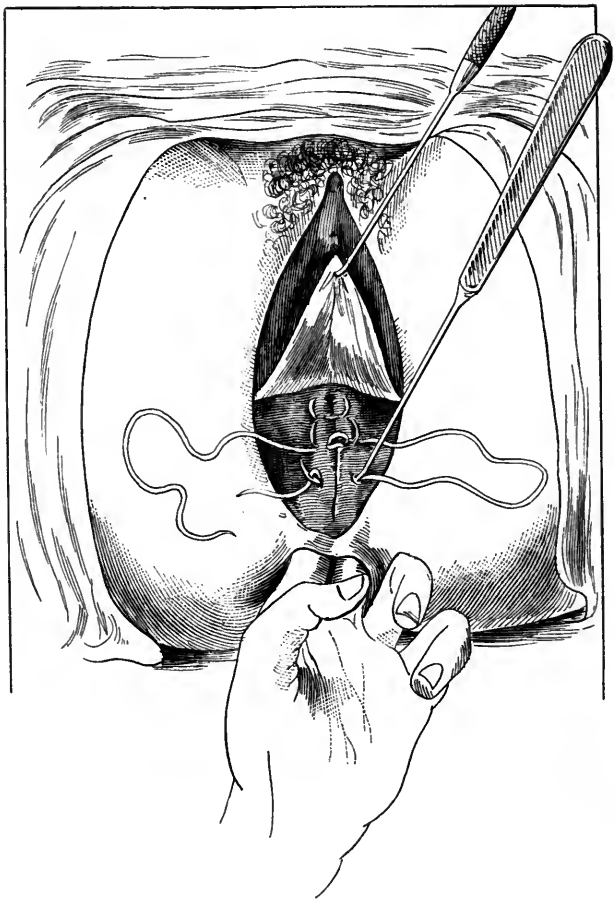
In June, 1887, at the meeting of the American Medical Association, Dr. E. W. Cushing, of Boston, in a paper contributed to the Obstetrical Section, reported *my method* of operation, and gave the result of our experiences in associated work. In this paper, he claims nothing original, refers approvingly to my methods, but states that the use of catgut, as a continuous suture in repair of the perineum, is due to Schroeder. In a very recent publication he writes: "At the meeting of the American Medical Association, in 1887, I reported my method of operating for ruptured perineum, by joining Schroeder's system of buried catgut sutures in layers, to Dr. Jenks's method of splitting the flap, followed by a cure in every case."

As we have seen above, in my paper read before the Obstetrical Section of the American Medical Association, in 1883, and again at the Copenhagen Congress, in 1884, I distinctly mention the use of the continuous animal suture in perineorrhaphy. In the *Annals of Surgery*, December, 1881, in an editorial upon "Animal Ligatures," I discuss the advantages arising from their use as sutures and the changes which ensue, when antiseptically buried in the tissues. I there advocate the use of the tendon from the kangaroo as a *buried suture*, taken as a double and also as an over-and-over continuous stitch. I first used, in 1871,[1] the buried animal suture in hernia, and soon after, published the results of a series of physiological, experimental studies upon animals, undertaken to demonstrate the advantages of the buried suture.

A résumé of these studies may be found in the *New England Monthly Medical Journal*, June, 1883, in a paper upon "The Animal Ligature." "For the same reason, in the use of the deep suture, we have sewed the catgut or tendon with the over-and-over stitch, or the ends from opposite directions through the same opening, after the manner of the shoemaker. The continuous suture has a double advantage. It reduces the number of knots to one or two, which is a considerable gain where a number of stitches are required, and the collateral swelling is equalized by distributing the pressure of the suture throughout its entire length. This insures a uniformity of circulation in the enclosed portion, and thereby lessens the devitalization of the tissues, causing a more sure and

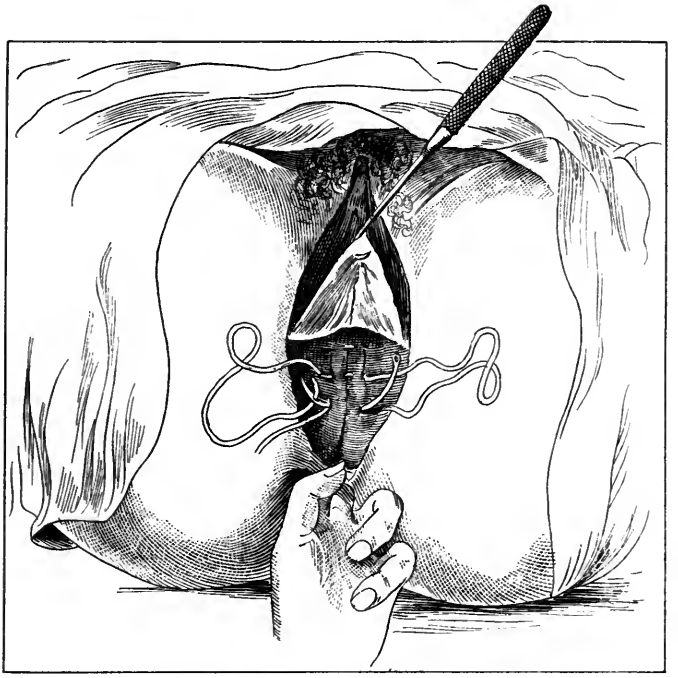
[1] Boston Medical and Surgical Journal, Nov. 1871, p. 315.

PLATE VII.



Represents the uniting of the widely separated transversi muscles by the double, continuous, buried, animal suture. The posterior vaginal wall is lifted and held by an assistant.

PLATE VIII.



Showing the operation conducted as in Plate VII., except a Hagedorn needle with eye added near the point, is substituted to serve for the more expensive needle, especially constructed for sewing with the Marcy stitch. The needle is rethreaded, with the opposite end ready for withdrawal.

rapid process of repair to ensue. This method of suturing is especially to be recommended in the closure of large hernial openings, the ligature of the stump of a uterine tumor, or a large ovarian pedicle." From that time until the present, I have applied the buried animal suture for the coaptation of nearly all wounded surfaces.

According to Martin, catgut was first used in Germany as a deep suture by Werth, in 1879. Doléris adopted its use in perineorrhaphy in 1885, and soon after Schroeder recommended it for perineoplasty.

Results, rather than the origin of methods, are the facts sought for by the profession. German surgeons may never have heard of my labors, but as the records stand, I am clearly entitled to priority in the use of the buried continuous animal suture. The manner of applying the suture, called the shoemaker's stitch, quite unlike any other, I demonstrated at the International Congress, in London, in 1881, and, so far as I know, its originality has never been questioned.

A brief résumé of my operation will close a paper already too lengthy. In incomplete ruptures, with more or less prolapse, the transversus perinei muscle can no longer be felt as a band in front of the rectum, and the pubo-coccygeus has lost its tonicity. The restoration of these, with the various attachments of the sundered groups, is the object sought.

The patient, etherized, is placed on a table, in a good light. The limbs are flexed, and both thighs are carried closely to the abdominal wall. This position is retained by the aid of assistants or the Clover crutch, which has been simplified by Dr. Kelly, of Philadelphia. Under the hips is placed an inflated rubber irrigating pan, with a large efferent tube, to conduct the fluids into a receptacle under the table. These inflated rubber receptacles are a great convenience, preventing all soiling of patient and surgeon, and were first made for me, nearly ten years ago, by the Davidson Rubber Co., of Boston. Somewhat recently, with a slight modification, they have been introduced to the profession as the "Kelly pad." The irrigation, with a 1 to 2000 mercuric bichloride solution is under the charge of an assistant, and the entire operation is conducted with due antiseptic care.

The sphincter having been stretched and the bowel thoroughly

emptied, two fingers in the rectum, the posterior third of the vagina is separated, with knife or scissors, from its vulvar attachments. The recto-vaginal space is easy found, without much loss of blood, and the dissection of the vagina from the rectum is carried into the lateral sulci as far as may be judged sufficient. The *separated flap is lifted* and held by an assistant; then I introduce a large curved needle, the eye near the point, armed with tendon, deeply from side to side; the opposite end is threaded, and the needle withdrawn, carrying the tendon with it.

The suturing is continued in this way, until the required number of stitches are taken (Plates VII., VIII.). In rectocele, with prolapse and large deep sulci, the deeply buried double stitch is taken on either side, to join the separated fibres of the levator loop with the retracted transverse perineal muscles, and then these are united laterally (Plate IX.).

Usually, four or five stitches are required to unite the posterior vaginal fascia, and then the separated ends of the perineal muscles are included by deep sutures. Any other needle and stitch may be used, but I prefer the one above mentioned.

In prolapse, where there is great redundancy of the posterior vaginal wall, a portion may be required to be removed, otherwise the edges of the inverted sides are united vertically. I use the buried suture, as described above, in recent cases, and seal with iodoform collodion.

In complete ruptures, after a careful refreshing of the sundered edges, I split laterally with a sharp knife, between the rectum and vagina, quite sufficiently to permit a free separation of the flaps. Over the sphincter, it is usually necessary to carry the dissection in a posterior direction in order to reach the retracted ends of the sphincter muscle. The lateral dissection must also be sufficiently deep to reach the separated ends of the transversus perinei muscles. To effect this, the posterior third of the torn vagina is usually detached.

If the ends of the retracted perineal muscles seem tense when united, I use the lateral supports, applying one or two pins as heretofore described. These serve simply to retain at rest the coapted parts, and lie parallel to the anus outside of the sutures. If the operation is aseptic, the after-treatment is simply rest in bed, and the cure is complete. The operation should be conducted with the

PLATE IX.

FIG. 1.

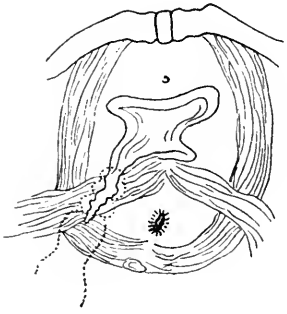


Diagram showing the union of the deep lateral sulci by the buried continuous double animal suture.

FIG. 2.

Needle specially designed for the use of the double continuous buried animal suture. The eye is made large for ease of threading, and the lateral slots hold the suture from slipping.

PLATE X.

A new depressor or speculum.

On page 31 of the *Transactions* reference is made to the exhibition of the above instrument. It is introduced here, since it has been devised as the result of the studies upon which the principles underlying the methods advised for the restoration of the perineum are based. Its simplicity offers little need for explanation. The vaginal portion is constructed so as to cause a minimum of pressure upon the vulvar outlet. It is irregularly broadened within, so as to secure a firm hold without slipping upon the levator loop, and this allows of depression without overstrain of the external tissues, and permits the foreshortening of the instrument to the minimum, scarcely more than one inch in length. When the uterus is of normal mobility the cervix may be easily brought to the vulva. The anterior vaginal wall and the uterus are, by its use, rendered much more accessible. The handle is made hollow for the escape of the irrigation fluid, and roughened for a secure hold.

strictest care, since it is difficult to operate upon this portion of the body without contamination of the parts involved. The sutures should be applied under irrigation, and the parts about the vulva covered with towels wet in a sublimate solution. Of all surgical procedures, few can be more dangerous than the deep implantation of infection carried by a septic buried suture.

My method differs from others in the following particulars:

1. The dissection of the posterior third of the vagina, not its mucous membrane, from its vulvar attachment, carried, as deemed necessary, into the recto-vaginal space, and the retention of this flap.

2. In rectocele with prolapse, the closure of the deep layers of the post-vaginal fascia by a continuous buried animal suture, taken either in single or double stitch.

3. In lifting forward the vagina from its vulvar attachment, the retracted transverse perineal muscles, with their connections, can be reached and closed also by a deep buried suture, making in this way a true restoration of the pelvic floor.

4. Coapting all superficial surfaces by a buried animal suture, applied in a blind continuous stitch from side to side, covering the same, when dry, with iodoform collodion.

5. The application of lateral supports, pins external to the sutures as a splint, to hold the parts in complete apposition without strain.

6. In complete ruptures, the lateral dissection, the joining of the rectal and vaginal edges with buried sutures, and then finishing the operation as in incomplete ruptures.

DOUBLE OVARIOTOMY DURING PREGNANCY; SUBSEQUENT DELIVERY AT TERM.

By WILLIAM WARREN POTTER, M.D.,
BUFFALO, N. Y.

When, forty-four years ago, the courageous John L. Atlee made his first ovariotomy, it proved to be a double one; the first operation in which both ovaries had yet been successfully removed.

It is needless for me to remind this audience, composed of men skilled in abdominal surgery or in some one of the cognate branches of gynecology, that this operation of Atlee's was considered a most remarkable achievement in the surgical field. Since that time ovariotomy has grown into an acknowledged status through various struggles in which the operators have been subjected, both on the part of the profession and laity, to animadversion and calumny. It is, therefore, no longer pertinent to seek the ear of skilled ovariotomists with reports of simple cases. I should not attempt to transgress the bounds of ordinary propriety on an occasion like this by committing such an outrage upon time and patience, not to say propriety. Believing, however, that the following case has sufficient interest outside of the ordinary to warrant the appropriation of a part of your valuable time, I present it to you as briefly as may be.

On the 27th day of March, in the present year, I was invited by Dr. C. W. Gould, of Buffalo, to see Mrs. K., residing at No. 1547 Michigan Street, near his residence.

Personal history: Age twenty-six, nativity German, color white; married nine years, has four children, oldest eight years, youngest two years and four months.

Physical examination: She was enormously distended in the abdomen, the girth at the umbilicus being fifty inches. There was some fluctuation, indicating free fluid in the abdominal cavity. In the left lumbar region was a hardened mass, but percussion in the epigastric region gave a clear note. In the erect posture the abdomen was pendulous, and hung over the pubic

arch much as a snow-drift sometimes hangs over the eaves of a house. The uterus was high up, the cervix soft, and there was so much impaction in the pelvic cavity that intelligent bimanual palpation was of very little avail. She was unable to sit up by reason of the great oppression from the distention of the abdomen. Her urine was scanty, but otherwise normal. She had been tapped by Dr. Hofmeier, on August 24, 1884, about six months after her third confinement, when, to use her words, "a pail and a half of water was drawn." She menstruated last on November 17, 1887. Dr. Gould's diagnosis, made in the morning of the day of this visit (which was the first time that he had seen the patient) was an ovarian cyst complicated with pregnancy. My examination only served to confirm his opinion, and it was determined, in view of the urgency of the symptoms, to make an early operation.

March 30. Ovariotomy at 12 o'clock noon; present Drs. C. W. Gould, B. H. Daggett, R. L. Banta, H. Woodbury, F. H. Potter, and medical students Widner and Kimpton.

An exploratory incision two inches in length was made midway between the umbilicus and pubic arch, and, the walls of the abdomen being thin, the peritoneum was quickly reached and opened, whereupon about two quarts of free ascitic fluid escaped.

The cyst was found to involve the left ovary and was extensively adherent in all directions. The fluid part of the cyst was drawn by a trocar and twelve quarts of water escaped. The solid part, which weighed ten pounds, could not be delivered from the opening until it had been enlarged to four and a half inches. The pedicle was broad and short. I partly enucleated the cyst, then transfixed and tied the pedicle with No. 4 Chinese silk, employing the Bantock knot.

After the removal of the left tumor the right ovary was sought and found to be cystic; when it was tapped and about one and a half pints of fluid drawn. It was transfixed and tied in the same manner as the other, and both pedicles dropped. There was very little hemorrhage though the adhesions were extensive, some of which I tied with catgut.

The toilet of the peritoneum was carefully and quickly made, and the incision closed with nine silkworm-gut sutures, care being taken to include the fascia, and to coapt all the layers well. The dressing was completed by iodol dusted over the line of the incision, several layers of antiseptic gauze, a thick layer of borated cotton, and a flannel bandage over all.

During the course of the operation a good opportunity was afforded to examine the womb itself, which could plainly be seen by all present, and was apparently the ordinary size of a gravid uterus at four months. It was disturbed as little as possible in making the toilet of the peritoneum, and, indeed, in all the manipulations incident to the operation.

She rallied quickly from the anesthetic, and was perfectly conscious in a few moments after she was removed from the table to the bed.

Time of operation one hour and five minutes. Weight of tumors thirty-eight pounds.

31*st*. 7 A.M. pulse 120, temp. 100°. 7 P.M. pulse 120, temp. 101°.

April 1. 7 A.M. pulse 110, temp. 100°. 7 P.M. pulse 115, temp. 102°. Gaseous distention of the abdomen quite marked.

2*d*. 7 A.M. pulse 100, temp. 101°. An attempt was made to pass the catheter by the rectum to promote the escape of flatus, but it failed. 7 P.M. pulse 120, temp. 103°.

3*d*. 7 A.M. pulse 110, temp. 98°. Nourishment per rectum entirely, as all food was vomited. 7 P.M. pulse 102, temp. 101°.

The pulse and temperature varied between 100 and 120, and 100° and 103°, respectively, during the first ten days, due apparently to intestinal distention and vomiting; after that both gradually dropped to normal.

On the twelfth day the abdominal dressings were removed for the first time, when the nine silkworm-gut sutures were cut away, and union by adhesion was found throughout the whole track of the incision. There was not the slightest surgical odor to either the dressings or the sutures. On the morning of the 6th of April there were regular uterine contractions, accompanied by the ordinary intermittent pain which indicated the threatening of miscarriage, but she was given full enemata of opium during the day, and before night the pain and contraction had entirely ceased, there being no further threatenings during the progress of the case in the direction named. The gaseous distention referred to was the only source of discomfort during this whole process, and to it was undoubtedly attributable the rise of temperature as indicated by the record. This annoyance was greatest about the fourth day, but finally the gas passed in large volumes both from the stomach and the rectum, after which she became comfortable and made no further complaint of any kind during the whole progress of the case.

She was allowed to sit up on the twentieth day, and soon began to walk around and resume the usual household duties pertaining to her walk in life.

She continued in perfect health and comfort up to the day of her confinement which occurred August 28th, when she was delivered of a male child, weighing seven pounds and a half, after a perfectly normal labor, and the puerperium was likewise normal in every way.

I have been somewhat minute in some of the details of the case, omitting, however, much that possessed no especial interest.

Ovariotomy has been performed successfully during pregnancy so many times that there is nothing particularly novel in that condition alone; but I have been unable to discover in the searches of the literature that I have made, a single reported case of a *double ovariotomy* performed *during pregnancy*, in this country, where the woman afterward *went to full term.*

Dr. Mundé reports a successful case of double ovariotomy during pregnancy in the *American Journal of Obstetrics* for July, 1887, but his case miscarried soon after the operation.

Dr. E. E. Montgomery, one of the Fellows of this Association, reports in the *Medical Register* of April 28, 1888, a double oöphorectomy done by him at the third month of pregnancy. I am unable to state whether the woman reached the completion of pregnancy.

In the *Archives of Gynecology* for May, 1888 (from *The Medical News*), Dr. W. Gardner reports a case in which he made double oöphorectomy, and the woman was delivered eight months afterward of a living child.

There may possibly have been other cases of double oöphorectomy during pregnancy, reported in our own country, that I have not observed.

Mr. Knowsley Thornton reports a successful case of removal of both ovaries during pregnancy in the *Transactions of the London Obstetrical Society* for 1886. His case fell in labor, and was delivered of a living child at about the end of the eighth month. Four months afterward this patient reported to him in good health and still nursing a fine healthy infant. This is the first case reported of the kind that I have been able to discover, but even his case did not go to the full period of gestation.

I am informed that Dr. Vander Veer, one of the Fellows of this Association, has recently successfully removed both ovaries during pregnancy, and he may also be able to report that his patient went to full term.

It would seem that the case which I have presented possesses an especial interest, in showing that the removal of the appendages exercised no influence, as far as can be discovered, on the performance of the healthy functions of gestation and final delivery; but, on the contrary, the woman has not been in as good health as now for several years past. She continues to nurse her child with a full supply of milk, and presents no extraordinary conditions of any kind that are apparent upon closest scrutiny.

I cannot close this paper in any more suitable way than to quote Mr. Thornton's final words, when he reported his case to the London Obstetrical Society, viz.:

"I have thought it well to place a full record of the case before this Society [Association], and I await with much interest the views of the Fellows upon the curious physiological and pathological problems which it suggests."

DISCUSSION.

Dr. A. Vander Veer, of Albany, New York.—Dr. Potter has certainly presented to us an exceedingly rare case, and just that kind which ought to be reported to such a society as this. I most heartily congratulate him on its successful termination. I do not now call to mind a case at all similar. I have looked up the literature upon the subject somewhat hastily and found ninety-six cases reported where the operation of ovariotomy (not double) had been done during pregnancy. Beyond a doubt the operation is thoroughly justifiable, and the fact seems to be established that the condition of pregnancy does not seem to interfere very much in any operation upon the abdomen. The pregnant uterus will endure, in many instances, operative interference without bringing on premature delivery.

Dr. Potter has referred to a case of mine upon which I operated three months ago, making double ovariotomy, and it was believed at the time that the patient was probably pregnant; as there is, however, some doubt in the case I should prefer not to have it go on record at the present time.

Dr. E. E. Montgomery, of Philadelphia.—I was very much interested in the history of this case of Dr. Potter's. Two years ago I read a paper on "Ovariotomy during Pregnancy." In it I presented a record of sixty cases, which showed that pregnancy had very little influence upon the mortality of the operation. In all those cases there was not one in which the operation was done on both ovaries. In the report of Dr. Mundé's case I think it was claimed that the woman was not likely to go through gestation with both ovaries removed. This paper of Dr. Potter's shows that this is not true. I thought until Dr. Potter read his paper that my case was the first. I performed an operation last November removing both ovaries at about the third month of pregnancy, and the patient was confined at full term, the child weighing eight pounds. There were no unfavorable symptoms whatever. The theory of Tyler Smith was that the ovaries directed the contraction of the uterus in labor. These two cases having gone through the full term, and having, at the completion of gestation, the labor entered upon and conducted in its normal manner, indicates that this theory is not perfectly correct. We must look for some other cause for the induction of uterine contraction at the completion of labor.

Dr. Thomas J. Maxwell, of Keokuk, Iowa.—There is one other point that is interesting in the case, viz.: That the patient operated upon nursed her child after gestation had been completed. This goes to prove

another point and may be regarded as conclusive, that lactation is not a substitute for menstruation.

Dr. W. W. Potter.—There is not much for me to add in the way of closing this discussion, excepting to thank the members for their courteous treatment of my paper. It was presented chiefly for the purpose of recording here, in this Association, what I believe is the first instance in this country of a case where both ovaries have been removed for cystic disease while the patient was in the pregnant state, and where, also, she has gone on to absolutely full term without a mishap of any kind; and where, likewise, she continued to nurse her child with a full supply of milk, without presenting extraordinary conditions of any kind after recovering from the operation, only those of normal pregnancy, labor, and the puerperium.

It may be noted that this was a compound cyst of the right ovary of several years' growth, its solid part weighing ten pounds, and its fluid part twenty-four; that the cyst of the left ovary contained about a quart of water, and sprouted up to a growth of this extent within the last four months previous to the operation, that period of time carrying her back to the date of the last menstruation, and to the probable date of conception.

Finally, to complete the complications, there was a large amount of ascitic fluid in the abdominal cavity, which was estimated at two quarts as it escaped, though there must have been much more.

It may be noted that drainage was not employed, though I should have been sorely tempted to introduce a tube, both on account of the ascites and the adhesions that were broken up, had I not feared it likely to provoke miscarriage. I preferred to take the risk of re-opening the abdomen in case of necessity. Fortunately, however, the latter contingency did not arise.

VAGINAL TAMPONNEMENT IN THE TREATMENT OF PROLAPSED OVARIES.

By WALTER P. MANTON, M.D.,
DETROIT, MICHIGAN.

In these days when laparatomy has become a cross-road operation, and every practitioner who can boast a scalpel and a threaded needle, rushes unhesitatingly into abdominal surgery, it is not ultra conservatism that bids us pause for a moment and look into a past, when these bolder methods were deemed, as that old worthy Richard Bright puts it, hazardous enterprises which we should not be tempted to adopt as a rule of practice; for, as the skilful angler stretches the tinselled bait behind him in order that it may be cast further along the stream in advance, so the retrospection of methods more or less fallen into disuse tends only to place present and future advancement on a surer, sounder basis.

I would not, however, be thought as blind to the great service rendered humanity by a long list of distinguished operators, who, from McDowell down, have remedied conditions which but little more than half a century ago were considered incurable; nor would I, by any word of mine, seek to stem the current of progress which is sweeping onward in its life-saving course.

But, let me put the question squarely, Are we not, in this country at least, given to accepting boldness for knowledge, and the glitter of surgical instruments for skill? Let me ask you, Who has brought these operations to be considered legitimate, the experienced, or the inexperienced, and if the former, was skill acquired by foolhardy daring, or by years of careful study and preparation?

Oöphorectomy for whatever condition performed, is, and must always be, looked upon as a dangerous operation, which reason dictates should not be attempted, except under the most favorable conditions, and by those well competent to cope with the multitude of

emergencies liable to arise, even in those cases which at the beginning appear to be most simple.

Surgery is not infallible, neither is the surgeon, and until the latter has had that training which gives him the knowledge of methods, it is the height of folly for him to open up the abdominal cavity.

With the successes of distinguished men before us, and the apparent ease and simplicity of acquiring results, the temptation to ignore possibilities is great, and we are apt to forget that less dangerous methods may be rewarded with as satisfactory and praiseworthy termination.

It was not until 1864 that Holst[1] and Shultze[2] called attention to the fact that the ovaries could be palpated by means of the bimanual touch. As the result of this announcement, the literature of ovarian diseases was soon flooded with accounts of the various disordered conditions which could be diagnosed in this simple manner.

In point of fact, however, as is well known, ovarian palpation is not so easy and requires much practice and nicety of touch; and the experiments of Meyer[3] go to show that even in the simple congestion and enlargement of the ovaries during menstruation, it is often impossible to *distinguish* any increase in size. When we consider, too, that even with the ovaries on a plate before us, or in section under the microscope, it frequently becomes a matter of dispute as to which is the healthy and which the diseased portion, the absurdity, in the majority of cases, of positive diagnosis with the little organ *in situ* becomes apparent.

Coe[4] has well expressed what all who are familiar with microscopical diagnosis will endorse, when he says; "The microscopist who succeeds in determining to what extent an ovary may contain cysts without being 'cystic,' and just how much fibrous tissue must exist in its stroma before the diagnosis of 'cirrhosis' is justifiable, will deserve no little praise."

With ovarian pathology in so unsettled a state, then, is the surgeon justified in gratifying his ambition for fame by removing the ovaries for discernible or obscure pelvic pain, before a careful trial

[1] Die Klinik für Frauenkrankheiten zu Dorpat, 1860 bie 1862. Rega, 1864.
[2] Jenaische: Zeitschrift für Medicin und Naturwissenschaften, 1864.
[3] Arch. für Gynäkologie, Bd. 22, p. 54.
[4] A System of Gynecology by American Authors, vol. i. p. 170

of all local and general treatments has been made; and, even in this instance, is it not a matter of supreme importance to determine carefully, as far as it is possible, whether such removal will accomplish the desired results?

Perhaps the most frequent condition which the specialist is called upon to treat in connection, or not, with uterine disease, is ovarian prolapse. It would appear no difficult task to determine whether or not an ovary is displaced from its position an inch to the side of the uterus, but in reality it is not always easy, for, occasionally, one or both of these organs may be found so low that a diagnosis of prolapse would seem called for, excepting that there are no symptoms pointing to this condition.

The ovary, like the uterus, being a comparatively free organ, undoubtedly changes its position as the result of conditions which also favor uterine displacements.

Barnes has pointed out the fact that the left ovary is more liable to downward displacement than the right, because the left side of Douglas's cul-de-sac is deeper than the opposite, and the right ovarian ligaments are shorter than those of the left side. The contiguity of the — often — overloaded rectum also undoubtedly exerts a strong influence in producing left ovarian descent.

The great amount of suffering to which these prolapsed organs may give rise, sooner or later leads the patient to consult a physician, who, perhaps, after a few local applications to the uterus, and without really discovering the true seat of the trouble, advises removal of the ovaries.

Now the treatment, other than surgical, of these much-abused organs when displaced, meets with but scant discussion in most of our text-books on gynecology, and the practitioner who would know something of the manner of handling these cases must search the periodical literature of the day for instruction.

For a method, the results of which are so pronounced and so gratifying, vaginal tamponnement is hardly mentioned in the books, and the indications pro and con for its employment rarely alluded to; yet I venture to say that, where the packing is properly applied, there is nothing which will afford the patient more relief and gratification.

The first to advocate the vaginal tampon in this class of cases was the late Dr. Taliaferro, of Atlanta, Georgia, who, in 1878, in a

paper before the Medical Society of that State, advocated putting the patient in the knee-chest position, retracting the perineum with the Sims's speculum, and packing the vagina, more or less, according to the requirements of the case, with pledgets of cotton, the upper ones of which had been soaked in glycerine.[1]

Other papers on the same subject appeared from Dr. Taliaferro's pen in 1882 and 1883. Since that time various substances have been advocated for the tampon instead of cotton, but those who have had much experience in this method of treatment have come to the conclusion that, although not fulfilling all the requirements, cotton is as yet the best substance at hand for the purpose.

The tampon which I have found most effective, consists of a thin strip of absorbent cotton about six inches long, by one-half inch wide. This is saturated in equal parts of pure glycerine and water, and squeezed dry between the palms of the hands; the strip is then folded upon itself from both ends until a quadrate is formed in shape much resembling a caramel. A large number of these tampons must be prepared at a time, for the capacity of the vagina is sometimes astonishing. Before using the tampons, I am accustomed to sprinkle them liberally with boracic acid.

To use the tampons the patient is put upon her left side, Sims's speculum introduced, the vagina cleaned with an antiseptic lotion, and the cotton wads packed around the cervix, until the vagina is from one to two-thirds full, when I am in the habit of finishing off with a roll of cotton or sheep's wool, the edges of which have been kneeded in and the roll compressed to about one-half its original size. This holds the packing in place for a longer time, but is not absolutely essential. The degree of firmness with which the tampons are crowded into the vagina depends on the sensitiveness of the patient. The more compactly they are placed, the more effectual are they in their working.

Before beginning the process I usually paint the vaginal-vault with Churchill's iodine, and then saturate the first two or three tampons with plain glycerine, iodide of potassium, iodoform, or other substance, in glycerine.

[1] 1. The Application of Pressure in Diseases of the Uterus, 1878. 2. The Application of Pressure in Diseases of the Uterus, Ovaries, and Peri-uterine Structures, 1882. 3. Precautionary Measures and Contra-indications to the Use of Pressure by the Tampon in Diseases of the Pelvic Organs, 1883.

Dr. Taliaferro advocated the knee-chest position in packing, but I have found the left lateral decubitus as satisfactory, and much less disagreeable and fatiguing to the patient. In certain cases, notably where there are subinvolution and sagging of the vaginal walls, the knee-chest position may be assumed until the organs have been forced up into position, either by atmospheric pressure, or by the cottou-stick, or fingers in the vagina, and then, as advised by Dr. Emmet[1] in a recent paper, the patient is allowed carefully to lower her body onto the left side, the speculum is introduced, and the packing inserted. I have tried this in but very few cases, having found that, as a rule, it is quite unnecessary.

When the dislocated ovary is non-adherent, there is usually no difficulty in replacing it by the finger or cotton-stick; but the pressure of the tampons is sure to force it upward with less discomfort to the patient. It may be asked, why, if the ovary is free, it is not as well to insert at once a cushion pessary which will hold it in place? The reason is obvious; in most of these cases there are present more or less congestion and a high degree of sensitiveness, not only of the ovary itself, but also of the surrounding structures, so that the presence of a pessary of any kind instead of affording relief, which tamponnement is sure to do, only increases the pain and discomfort, with, perhaps, the chance of lighting up an active inflammation. A few packings will, however, usually do away with these conditions, and a suitable support may then be placed.

The cases, however, in which the value of vaginal tamponnement is best observed, are those where the ovary, having become prolapsed into Douglas's pouch, is tied down and fixed by inflammatory deposits. Here the results of careful, systematic packing are often truly brilliant.

That the favorable effects produced by the tampon are due almost wholly to mechanical pressure, aided probably by the various medicaments with which the cotton is impreguated, especially where adhesions are present, is well illustrated by the following cases:

Case I.—Mrs. L., age thirty-eight, referred to me by Dr. Bigg, of Detroit, entered my private hospital May 30th, of the present year. She had borne one child at term sixteen years previously, and had aborted twice at about

[1] On the Use of the Vaginal Tampon in the Treatment of Certain Effects following Pelvic Inflammation. Reprint. New York Medical Journal, February 13, 1888.

the third month. Menstruation began at fourteen; was always regular, and associated with more or less pain and general malaise, for a week previous to the flow. Five years ago she suffered from ovaritis, possibly of a gonorrheal nature, for which she had been treated, and had remained comparatively well until two years ago, when, after a long exposure and thorough wetting she was again attacked by ovarian trouble. At this time, (May, 1888) she suffered greatly from a sensation of constant "weight and pulling" in the left side, with pain running down to both knees, the condition on the right side having existed but two months though increasing in severity. Walking is difficult and causes her much suffering. The appetite is fair, but digestion is impaired. Physicial examination revealed a retroflexed uterus, somewhat enlarged but quite movable. The right ovary, the size of a walnut, was prolapsed deep behind the uterus: left ovary the same, but slightly higher up. Parts exquisitely sensitive, and examination caused great pain and discomfort. During a period of ten weeks this patient was packed some twenty-one times. On two occasions during the treatment, a soft rubber-cushion pessary was inserted instead of packing, but it failed to afford relief. At the end of five weeks the patient was sent to her home in the country, but continued to visit my office weekly for treatment for another five. At the end of this period the ovaries had diminished fully one-half in size, were movable, but slightly below their normal position, and the local sensitiveness had entirely disappeared. At this date—two months since cessation of treatment—the ovaries still continue in position, the pain has constantly diminished, that in the legs has entirely disappeared, and the patient sleeps, eats, and digests well, and is able to walk a mile without much discomfort. In conjunction with the tamponnement, tonics and the iodide of potassium were given. At present she is taking small doses of corrosive sublimate, and the hot vaginal douche is employed.

The results in this case are better appreciated from the patient's gratitude than from anything that can be written.

Case II.—Mrs. J., referred to me by Dr. George P. Andrews, of Detroit, a widow, forty-three years old, mother of four children, the last of which was born eleven years previously; had suffered since the birth of her third child with severe and constant pain in the small of the back, for which she had been treated by several well-known physicians. Examination revealed a retroflexed uterus bound down by adhesions, and a mass to the right, which proved to be the ovary surrounded by effused lymph. I began packing this patient on the twenty-eighth day of July. On the thirteenth day of October, after thirteen packings, the uterus could be placed in anteversion, and a soft ring support was adjusted. She wore this for a time; and I then resorted to the packing to force up the ovary. After seven packings the ovary became quite movable, and could be pushed well up in the pelvis. December 24th, the patient left town, and I did not see her until the fourth of the March following. She was much improved in general health and had had no attack of local inflammation. A Smith-

Hodge pessary was inserted to keep up the womb, which was inclined to fall backward. A week after placing, the support came out. April thirteenth, the patient returned with the womb tipped back into the old position, and the ovary bound down almost as firmly as at first. There had, however, been no inflammatory attack to account for this. To shorten a long story, the packing was resumed, and the ovary liberated from its adhesions. After a time it again became adherent, and was again released. Subsequently I lost sight of the case.

Now, as there was in this case no inflammatory condition to account for the repeated tying down of the ovary, I can only account for the results obtained from the packing and the subsequent return of the condition, by supposing that the adhesions were not all absorbed, but were greatly stretched, and that after stopping the packing they gradually contracted and drew the ovary down to its former position.

Such cases as the above might be multiplied, but the two given will serve to illustrate the very efficient action of the tampon when correctly used. The only contra-indication to the employment of this method of treatment is active inflammation. When there is a high degree of sensitiveness only, or where the parts are engorged with blood, great relief is afforded by the support furnished by the tampons. In all such cases the vaginal vault should be painted with iodine, the upper tampons well soaked in medicated glycerine, and the packing placed as lightly as possible, until tolerance is established.

In the above remarks I have attempted to show:

1. That the indiscriminate removal of ovaries for pelvic pain is to be discountenanced on every ground.

2. That vaginal tamponnement properly applied and persisted in will result in a satisfactory percentage of cures in cases of prolapsed ovaries; and,

3. That in cases where cure is impossible, it will afford immense relief without risk to the patient, and render her life worth living.

DISCUSSION.

Dr. Sarah E. Post, of New York.—Considering the inflated ring as a variety of tampon, I have, by invitation, presented notes in regard to its value in the treatment or ovarian prolapse. I shall refer to three recent cases.

Case I. was that of an unmarried woman of twenty-three years, a teacher. This young woman was tall (five feet ten inches in height) and admirably formed—of a build and beauty almost suggesting Bulwer's women of the *Coming Age*. She was, also, in no way hypochondriacal and yielding, but ambitious for distinction, especially in music, in which she aspired to excel. She presented herself August 3, 1887, unable to walk a block, in tears, and with complete loss of emotional control. Her chief complaints were pain in the left inguinal region, headache, and mental distress. She had always suffered with dysmenorrhea. In 1883 she had had peritonitis, from which she was in bed for six weeks. Since that time her dysmenorrhea has increased. If menstruation occurred during the school week, from fear of losing her position, she remained at home only the first day; but if it commenced on Friday, she remained for three days in bed. Taking her active habits and vigorous physique into consideration, the fact of intense suffering will be apparent. Examination showed retroflexion and the left ovary prolapsed. The patient had had a yellow and even brownish discharge for some time, and there was fulness in the neighborhood of the uterus, suggesting other peritonitic sequelæ. The tenderness was very great and adhesions prevented a complete reduction of the prolapse. The hot douche was ordered, iodine was applied, and tampons were used twice. The patient had engaged to open a school in September at a place about fifty miles distant. What could be done? The use of the inflated ring was explained to her, the necessity for its removal and reinsertion. She had been under treatment but a short time, and it was an ordeal to attempt the management of this ring, but her necessity was great, and she succeeded. November 20th she returned to say that she menstruated without going to bed, that she had no headache, and that she has no pain at all in the side when standing. The discharge was now colorless. After this she was seen only when she required a new ring. March 10, 1888, she said that she found herself forgetting to insert it, and examination showed the uterus in position and the ovary beyond reach. She was directed to discontinue the ring. She could now walk any reasonable distance, dance, stand all day in teaching, and had completely lost her hysterical symptoms.

Case II. was a single woman, twenty-two years of age, forewoman in a sewing establishment. Pelvic diseases do not respect persons in any way. This young woman also was large and splendidly formed. She had always had dysmenorrhea, and for a year she had pain in the left inguinal region on walking. After dancing, it would be very bad. She presented herself in November, 1887, with this as her chief complaint. For two months during the summer she had been sick in bed. Her abdomen had been sore, and she had had fever and chilly sensations. Ex-

amination showed retroflexion posterior to the uterus, a prolapsed ovary, and on the left side a second tumor the size of a walnut. The ovary in the cul-de-sac could be displaced, but this lateral tumor could not. It was near the uterus and evidently near the broad ligament. Hot injections were first used. December 13th, a tampon was applied. December 16th, the patient complained of a considerable discharge. The tumor at the left was now softer and had diminished in size. It was now considered a pyosalpinx left from her attack of peritonitis in the summer, which, from the elevation of the fundus by the tampon, had been spontaneously discharged. The cavity subsequently refilled and discharged several times. January 15th, an air-ring was inserted. January 24th, the patient had menstruated with but little pain, and at other times did not suffer at all, when the ring was in position; when it was out the old pain returned. April 10th, she was now menstruating four days instead of six, did everything in the way of exercise that she cared to do, and was the picture of health. Examination showed the sensitiveness gone, but the position of the parts was unaltered. The patient now "forgot" to wear the ring, and would go without it for from a day to a week at a time. In spite of a retroflexed uterus, a prolapsed ovary, and a pyosalpinx, she felt comfortable at least for a few days. If the ring was left out too long, however, the cavity at the left would refill and she would have a return of her pains. There was not the same resiliency of tissue in this case as in the first one; there seemed to be no tendency toward cure, but the ring worn was only a No. 2, a very small size, and there seemed no objection to it being worn indefinitely, at least during the intervals when most required. These rings were worn during menstruation, being removed for cleansing, and left out at night.

Case III. was that of an unmarried woman of twenty-eight years, a child's nurse. She had been suffering from ovarian pain for five years. Two and one-half years ago she had returned to Germany an account of ill-health, and was treated in Professor Kaltenbach's clinic in Giessen. For six months afterward she had felt rather better, but then her pains had recommenced. Difficulty in walking and general nervousness were her main complaints. During May and June of the present year she was in the Randall's Island Hospital for nervous diseases, but had not improved so as to be able to take a place since. She presented herself July 15th. Examination showed the uterus in position, with the left ovary as large as a pullet's egg, at the side of the uterus, but low and very sensitive. Hot injections gave immediate relief, but the tampon could not be borne. In the meantime, the girl must enter a free hospital or she must earn her bread. She had consulted many physicians, and "operations" had been talked of. As a mere experiment, August 31st, an air-ring was inserted

September 3d, she returned with a beaming face. She "did not feel perfectly well," but she could walk without pain. On the removal of the ring it was found that she had a deep fissure of the fourchette, which bled freely. The suffering from the insertion and withdrawal of the ring can be imagined. Examination showed the ovary exactly as sensitive as on former occasions and as low. Treatment was directed toward the fissure, and the use of the ring postponed. September 7th, the patient returned, begging to be allowed to wear the ring again. Permission was given, and three days later she desired to take a position, and made the arrangements. The ovary was still in the same condition, but she had become unconscious of it, because protected from friction and compression.

The routine treatment in these cases was a long, hot douche at night, and insertion of the ring in the morning. It should not be worn at night, on account of the unremitting distention of the vagina thus obtained; also the maceration of the mucous membrane and consequent odor. The ring was to be cleansed upon removal with soap and water and a brush. The time during which a ring would remain sweet varied greatly. One case would spoil a ring in two weeks, while Case II., here detailed, wore one for three months without any odor attaching to it.

The cases have been fully explained, lest it should be thought that the relief given had received an exaggerated statement. It will be seen that they were typical cases of their kind—Case I., a case of prolapsed ovary with retroflexion; Case II., a case of prolapsed ovary and pyosalpinx with retroflexion; and Case III., a case of ovaritis with prolapse. It was confidently stated that such quick relief could not have been obtained by other except surgical means. The inflated ring destroyed the profits of gynecology. The patient was made happy, but the doctor remained poor.

Concerning the question of treating unmarried women. With all due respect for the hymen, there are times and places when the hymen is of small consequence to a woman, compared with the ability to earn her bread.

Concerning the possibility of suggesting the habit of masturbation by the use by unmarried women of this ring, this had receives careful attention. The tendency of the girls to forget to insert the rings so soon as their pains ceased to remind them of the duty, is against such a supposition. Further, all were working girls, among whom the practice of masturbation must be very rare. Irritating nerves and an irritating discharge are much more likely to induce masturbation than curative measures. Masturbation is not an impulse of the organ in health. It is rather the indication of a diseased state.

NOTE ON THE TREATMENT OF ENDOMETRITIS BY INJECTIONS OF PURE NITRIC ACID.

By A. CORDES, M.D. (Paris),
GENEVA, SWITZERLAND.

Although I am not a decided enemy to the curette in the treatment of endometritis, I nevertheless think it may be with advantage, in some cases at least, replaced by cauterization of the uterine cavity with a powerful agent like nitric acid. Curetting has the same danger in the non-impregnated uterus that it has in the puerperal uterus, which I pointed out in my memoir read before the Detroit Gynecological Society (*Annals of Gynecology*, May, 1888, p. 375). The rivalry between curetting and intra-uterine cauterization has been much ventilated during the past weeks (*Journal de Méd. de Paris*, July 22, 1888, p. 103; Ibid., July 29th, p. 132; Ibid., August 5th, p. 171, etc.), and I think it may not be uninteresting to quote some few cases in favor of cauterization—cases in which the curette might have been used. I shall only report recent cases of cauterization with nitric acid, not mentioning the injection of tannic acid, iodoform points, etc., which suit the milder cases.

Case I.—*November* 5, 1886. I was called by Dr. Gœtz, adjunct to the medical clinic, to see Mrs. B., one of the nurses in his ward; she had had one child, then a miscarriage, some time ago. Dr. Gœtz found some fungosities in the womb, and wished me to curette. Patient loses blood in quantities at the periods, and sometimes, also, between them. Uterus measures eight centimetres. For some reason or another, I could not get a sufficient dilatation before the 12th.

12*th.* I injected one gramme and a half of pure fuming nitric acid, which remained in the uterus. Very little pain.

13*th, and subsequent days.* Discharge similar to the lochia, containing shreds of the membrane of the uterus.

18*th.* Patient well enough to resume her duties.

June 15, 1888, saw Mrs. B. Her periods are normal, regular; no bloody

discharge between them. She says her husband has an abscess in the groin. Can this be the cause of the endometritis? I may suspect, but I cannot affirm.

CASE II.—Mrs. B., twenty-nine years of age, eight children. Peritonitis after the first confinement. Uterus bulky, very perceptible above the pubes, measures seven and a half centimetres.

October 20, 1887. Uterine discharge whitish, very profuse, irritating, cervix and vagina red. Iodoform on cotton plug.

26*th*. Slight shivering yesterday. Quinine.

I saw Mrs. B. from time to time, all the symptoms remaining the same, and I tried sulphate of zinc points, iodoform pencils, etc.

January 15, 1888. I decided to inject pure fuming nitric acid—four grammes.

16*th*. Slight bloody show; no fever.

18*th*. Patient well, although she went yesterday out of doors. Some shreds of membrane in the discharge.

All right till July 5th, when she came to me, complaining of a creamy discharge. Uterus measured six centimetres and had iodoform pencil. Mrs. B. went to Italy on the 13th. I have heard from her since. She writes that she is doing well.

CASE III.—*July* 30, 1888. Mrs. T. came some days ago to the Maternity, with a history of bloody discharges, etc., much resembling a miscarriage. No fetid odor of the discharge. I did not do anything except to use vaginal injections, keep the bowels open, etc. I decided to inject nitric acid. The uterus was widely open; discharge dirty, muco-purulent, slimy. Uterus measured eight centimetres. I gave a uterine injection of four grammes of pure nitric acid. Much of the acid flowed back into the vagina, owing, I suppose, to the patency of the cervix. Bicarbonate of sodium in the vagina; liberal injections of water. Patient complained of heat in the vagina.

2.30 P. M. Patient so well that she attends the lectures for the midwives.

August 3. Slight elevation of temperature. Erosions on the cervix, mucous discharge. Daily intra-uterine injections with corrosive sublimate, one to four thousand.

5*th*. Some shreds of membrane brought out by the injection.

9*th*. Patient wished to be discharged. She came every day to have the uterus washed with the sublimate solution. She did not complain of anything; the discharge was still slimy, not purulent. Uterus measured seven and a half centimetres. According to the state of the uterus, she will be readmitted before long, when I will either use the curette or make another nitric acid injection.

The first one, I think, did not succeed because the patency of the cervix allowed the nitric acid to flow out as soon as it entered the uterus. I ought, I suppose, to have made the injection while the patient was in the genu-pectoral position. At any rate, these cases prove the innocuity of injections of pure fuming nitric acid, which I much prefer to the nitrate of silver, which is very painful.

18*th*. Patient returned. Uterus measured eight centimetres; uterine washing with sublimate solution; injection of four grammes of pure fuming nitric acid. No pain in the uterus; a portion of the acid flowed out into the vagina. Slight pain; vaginal washing with water; bicarbonate of sodium on plugs.

The next day the patient walked about in the garden. Daily washing of the vagina and uterus with sublimate solution, one to two thousand.

21*st*. Saline laxative for costiveness.

22*d*. Patient wished to leave, for fear of losing her situation as servant.

24*th*. Washing of the uterus done by Dr. Mercier, house surgeon.

26*th*. Some white shreds of mucous membrane came with the water used as injection. Uterus measured seven centimetres. Slight erosion of the anterior lip of the cervix; slight milky discharge. No pain in the uterus.

28*th*. Discharge very slight; still some mucous shreds; erosion of cervix is healing. Bleeding erosion on the vagina.

30*th*. Erosion on cervix healed; erosion of vagina healing.

The injection still brings shreds of membrane. Uterus measures seven centimetres. The sound meets some irregularity in the uterus. I determined to curette the uterus and insert a laminaria tent.

I must consider this last case as a defeat for the nitric acid. The non-success I attribute to two things: First. The cervix being rather widely open the caustic flowed out as soon as injected, and did not remain long enough in contact with the diseased mucous membrane. Second. Mrs. T. did not give her genital organs the rest required during the treatment. The patient lost no blood or pus since the beginning of the treatment.

TREATMENT OF PUERPERAL ECLAMPSIA.

ILLUSTRATED BY CASES.

By A. CORDES, M.D. (Paris),
GENEVA, SWITZERLAND.

Case I.—On Feb. 11, 1879, I was called hurriedly to Mrs. C., who was said to be dying; she was twenty-seven years of age, pregnant about six months. I found Dr. Baylon at her bedside, who had prescribed three leeches to be applied on the mastoid processes. There was coma; pupils now large, now contracted; trismus; stertor; face pale. Every quarter of an hour I injected in the thighs twenty drops of a saturated solution of bromide of potassium. The first injection seemed painful; the patient tossed about. I know, from my experiments on rabbits, that the bromide injection is very painful. The coma persisted. At two o'clock the patient had about five grammes of bromide of potassium by enema. Five fits altogether. I did not think it advisable to examine *per vaginam*, for fear of bringing on another fit. At eight o'clock, pulse 130; four fits. Leeches again on the right mastoid process. At half-past nine no change.

Feb. 12, nine o'clock A.M. No fits. Two drachms of bromide of potassium to be taken during the day. Leeches; no trismus; gums dirty all the same till half-past eight P.M.; pulse 160; restlessness.

13*th*. Nine o'clock A.M. Dr. Baylon prescribed tartar emetic, two grains, in water, to be taken during the day. Patient has partly regained consciousness. Nine P.M., no action of bowels; she passed water involuntarily; she does not speak; Pulse 100; photophobia.

14*th*. No action of bowels; pulse quiet. Patient got up to pass water. Said she did not feel the movements of the child. At five o'clock P.M., patient expelled the whole ovum. She gradually recovered, and died one year after, from consumption.

I think, in this case, that Dr. Baylon and myself were quite right not to examine *per vaginam*, there being no necessity for such examination. The examination, in fact, may bring on fits by a diastaltic effect.

Although examination of the urine might have proved it to be albuminous, I do not regret not having analyzed it, which would

have made catheterization necessary. This also might cause fits, but the water was scanty. The injections of bromide gave rise to sloughs.

I would not, in such a case, inject bromide subcutaneously; but a small part of it is absorbed, and, used hypodermatically, it is very irritating. The rectum absorbs it easily when the patient cannot swallow.

CASE II.—On July 12, 1875, one P. M., I was called to Miss B., twenty-one years of age, pregnant about eight months, who had had three fits. Right labium majus much swollen; both legs edematous; tongue bitten on the right side. Facies obtuse. Bromide of potassium, two drachms to be taken in the day. Puncture of labium. Three P.M., one more fit, cyanosis, trismus; bleeding in the arms, two hundred and fifty grammes. Leeches to the mastoid processes. At quarter past four, condition unchanged; chloral, five grammes per rectum. Dr. Binet kindly saw the patient with me. Urine scanty, coagulating when heated. Cervix obliterated. I gave the enema myself, and applied the leeches. At eight P.M., Miss B. was quiet, she drank some chloral and bromide of potassium; chloral to be repeated.

13*th*. Half-past ten o'clock P.M., the orifice of the womb being nearly dilated, I put on the forceps and delivered a male child alive.

On the 16th the urine contained no albumen. The menstral period came on August 22d.

CASE III.—Mrs. L., being pregnant about six months, sent for me July 2, 1877, at six o'clock A.M., for cramp in the stomach. During my visit she was seized with an eclamptic fit. Bromide of potassium, four grammes, to be taken in the day. Three P.M., four fits, pupils widely open, fetal heart on the left side. Half-past four, seen with Dr. Binet, who thought the case dangerous. We agreed not to interfere with the pregnancy. Asafetida in enema. Cyanosis; frothing at the mouth. Chloral, four grammes to be taken in the day. Half-past six, stertor, one more fit; leeches behind the ears. Half-past ten, no more fits since six o'clock; passed water; enemas retained; face swollen; pupils insensible to the light, not much open.

3*d*. Nine o'clock A.M., coma, uterus not contracting. Purgative enema with sulphate of soda and syrup of mercurialis. Three o'clock P.M., Mr. L. says the patient answered cheerfully to his questions. Bowels open, chloral again.

4*th*. Nine o'clock A.M., patient conscious, bowels moved.

6*th*. Fetal heart cannot be heard.

7*th*. Three o'clock A.M., child expelled, placenta remaining in utero. Nine o'oclock A.M., placenta detached, I extracted it. On the 28th Mrs. L. was so well that I let her go to Berne.

CASE IV.—June 17, 1880, three A.M., I was summoned to Mrs. B., twenty-two years of age; delivered for the first time yesterday at five o'oclock P.M., by a midwife; had had a fit before delivery. During my visit I heard that Dr. Badan has seen the patient one hour before my arrival. He prescribed

chloral, leeches, and enema with salt. One fit during my visit; uterus contracted; tongue dry, bitten in several places. Nine o'clock A.M., consultation with Dr. Badan. Temperature 38.6° C.(101° F.); urine scanty, albuminous. Bromide of potassium six grammes, julep one hundred and eighty grammes, a tablespoonful every hour. Four o'clock P.M., consultation with Dr. Badan. Bowels move once. Pulse 120.

18*th*. Ten o'clock A.M., patient died a quarter of an hour ago. No necropsy.

From these cases, and some other ones I might report, I think I am entitled to say that the best treatment of puerperal eclampsia is chloral and bromide of potassium, chloral being a sedative, and bromide of potassium being the medicament against diastaltic fits. Chloroform may be given during fits, during the examination, or any interference, when these are necessary.

Barnes says (*Obstet. Med. and Surg.*, Eng. ed., 1, p. 409): "The slightest disturbance, especially touching the genitals, may provoke a fit."

Any interference must be avoided when not quite necessary, even passing the catheter, without the patient being under chloroform.

Bleeding must not be a general treatment. Those who have commended it have forgotten Hippocrates' aphorism: "Sanguinis moderator nervorum." However, bloodletting, in the shape of leeches applied *one after another* to the mastoid processes, so as to have constant oozing of blood, has always, in my experience, had a good result in relieving the congestion of the brain. Bleeding from the arm must, I think, be done only in case of active congestion of the brain, manifested by cyanosis, stertor, and difficulty in breathing. I have seen cases in which it relieved quickly the cerebral congestion, whether serous or sanguin.

Although the depletion of the uterus does not always stop the fits, I think delivery should be performed as rapidly as possible without violence. I would, as was done in Case II., put on the forceps whenever the state of the cervix makes extraction of the child possible without violence. In some cases bi-polar version might be used; but I think it generally requires too much manipulation.

INDUCTION OF PREMATURE LABOR.

By BYRON STANTON, M.D.,
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Being impressed with a sense of the obligation which I, as one of the foundation members, owe to this Association, organized for the "cultivation and promotion of knowledge in whatever relates to abdominal surgery, obstetrics, and gynecology," I proceed to the discharge of my duty by submitting some remarks upon the subject of induced premature labor—a subject in regard to which an increased interest has been awakened in my mind by some recent experience.

The distinction between induced premature labor and induced abortion is well understood, and what I have to say applies only to cases in which the fetus has reached the period of viability. In recent works on obstetrics this subject is treated of at full length. In older works it was disposed of in a few lines or passed by wholly unnoticed.

The induction of premature labor was undoubtedly practised by the ancients, but by them its application was limited to cases of contracted pelvis. In later times its application has been extended to many other conditions. Two centuries ago it was resorted to in some cases of unavoidable hemorrhage, but there has always been a class who have strongly condemned it, regarding it as an unsafe and unjustifiable procedure. In the last century it was denounced as criminal and, according to Denman, it was not until 1756 that the English authorities decided upon its propriety and morality. As late as 1827 the Royal Academy of Medicine, of France, pronounced against it as immoral, and less than sixty years ago (1831) the operation was first performed in that country. Within the last half century it has been opposed by Osiander, Stein, Joerg, and others. Baudelocque opposed it strongly. The only cases in which

he admitted the propriety of its performance were those of great uterine hemorrhage, and then only when the child was probably destroyed and the safety of the mother compromised. The arguments which were used against this operation were based on the ground of its immorality as well as its uselessness, and would apply with equal or greater force to the use of forceps, turning, and all obstetric operations. Cesarean section is looked upon as a recognized and well-established operation; yet its statistics as regards the result to the mother will bear no comparison with those of induced labor, and as regards the fate of the child it has but little advantage. Craniotomy had a stronger opposition and yet, fraught with danger as it is to the mother and fatal, of course, to the child, it has had the endorsement of the profession. If such an operation can be looked upon as a justifiable obstetric procedure, an operation which does not add materially to the risks of the mother and which has a record of half of the children saved, needs no defence. Indeed, like the resort to turning and the use of the obstetric forceps, the operation will do much to obviate the necessity of having to choose between craniotomy and Cesarean section. Its object being not only to save the life of the child, but to diminish the dangers to the mother, we may cordially agree with the late Dr. Bedford that "it is the most precious boon which science has yet bequeathed to suffering woman."

The *morality* of the procedure may, I think, be regarded as recognized.

An argument against induced labor is that there are some risks incurred by the mother that she does not have to encounter at full time. The maternal passages have not fully undergone the changes which nature effects during pregnancy; the uterus is not in a condition of best muscular development to effect delivery and expedite involution; the detachment of the placenta is more frequently delayed, and malpresentations are of more frequent occurrence. On the other hand, it may be stated that malpositions in the last two months of pregnancy are not likely to be rectified, if there is pelvic deformity, at full time; that the child is of smaller size and the head more yielding and more easily adapts itself to the shape of the pelvis; that the mother escapes the dangers incident to protracted labor, and if craniotomy becomes necessary it is more easily and

safely performed. The other dangers, such as fever, pelvic inflammation, etc., are no greater and no less than in labor at term.

Statistics show that artificially induced labor is not attended with any more risk to the mother than accidental premature labor, not much more than normal labor at term, and is much less hazardous than the operations for which it is the alternative—craniotomy and Cesarean section. The propriety of the induction of labor has also been questioned on account of the high infant mortality attending it. Among the more recent writers Winckel, Litzmann, and Spiegelberg have been quoted as holding that such intervention is dangerous as compared with spontaneous labor. Strauck, of Moscow, in *Archiv für Gynäkology*, Band 31, Heft 3, concludes that on account of the great infant mortality the induction of premature labor should give place to Cesarean section, since there is every reason to believe that the latter operation will lower its mortality as operators become more practised. Is there not reason to believe that with improved methods of inducing labor, and the greater care bestowed upon the infant after birth, induced labor will also lower its mortality? Strauck, in his estimate of the operation as relating to the child, bases his conclusions, I think, upon erroneous data. For instance, in twenty-one of his cases where labor was induced because of contracted pelvis, he gives the measurements of the *conjugatæ veræ* as from $1\frac{3}{5}$ to $3\frac{1}{2}$ inches. The induction of labor in a woman with a conjugate of $1\frac{3}{5}$ inches, could but result fatally to the child, and such cases should be excluded from consideration, in determining the propriety of inducing labor after the seventh month. The choice would be between induced abortion and Cesarean section. But in Strauck's own cases, of which he reports twenty-eight in all, twenty-one of the children lived, and eight were stillborn. Of the twenty-one living children, ten died in hospital, and eleven were discharged healthy. Whether the deaths were all due to conditions connected with premature birth, I do not know, but granting that they were, eleven healthy children is a good result in twenty-eight cases, in twenty-one of which the operation was performed because of contracted pelvis, with conjugates ranging from $1\frac{3}{5}$ to $3\frac{1}{2}$ inches—better than would have followed the operative procedures that might have been required at term.

In those conditions which jeopard the safety of the mother and child at full term, nothing will so greatly diminish mortality as

recourse to the induction of premature delivery. Its *safety*, then, may be regarded as established.

The great number of cases in which it has been performed with success, when previous labors have been attended with loss of infant life, may be regarded as demonstrating its *utility*.

That it is resorted to in cases in which it may not be necessary, is no doubt true. The same may be said of all the aids to labor. That many cases to which it is applicable are permitted to go to full term with loss of life of mother or child is, no doubt, also true.

The *morality*, *safety*, and *utility* of the operation being generally admitted, the next thing for us to determine is to what classes of cases the artificial induction of labor is applicable.

The points involved in determining this question are:

1st. Whether the case is one in which delivery at term will involve the death of the infant, and subject the mother to much suffering and danger, and yet permit delivery at seven or eight months.

2d. Whether the conditions are such that the life of the mother will be imperilled by continuance of pregnancy to the full period of gestation, by hemorrhage, or some intercurrent disease, or by aggravation of some chronic ailment which can be averted or removed by earlier delivery; and

3d. Whether there is a history of infant fatality in several successive pregnancies at some regular time after the age of viability.

In the first case, delivery would be induced rather in the interest of the child than the mother; in the second, more in the interest of the mother; in the third, purely in the interest of the child.

Reference has already been made to the fact that this operation was first resorted to only in cases of contracted pelvis, and ever since the operation was first suggested this has been the condition which has most frequently called for premature delivery. Dr. Merriman has laid it down as a rule that it should be strictly confined to such cases, but it now has a wider range of application.

In the determination of the question as to what cases of contracted pelvis it is applicable, there are given two extremes of measurement which limit the operation. These extremes have been variously stated, the maximum ranging from 3 to 3.75 inches, and the minimum from 2.75 to 2.25 inches. Should there be a measurement

in excess of the maximum stated, the operation is commonly regarded as uncalled for. I say *commonly* so regarded, for the reason that in exceptional cases a greater diameter may demand premature delivery, where for several successive pregnancies the child has attained such size that it could not be born alive. In such a case the propriety of the operation is to be determined more by this fact than by the diameter of the pelvis.

Should there be a contraction below the minimum above named, the question to be determined is between induced abortion and Cesarean section.

It is difficult to fix exact measurements within which the induction of labor is justifiable. The difficulties of labor depend to some extent upon the character and location of the deformity. Delivery is more easily effected through a flat pelvis than through a generally contracted pelvis with the conjugate of the same measurement. Deliveries are also easier, *cæteris paribus*, when the narrowing is at the superior strait. Contraction of the same degree at the lower strait causes more delay, and more frequently calls for the application of forceps. If both straits are contracted, the difficulties are increased, for energetic uterine action might overcome the resistance of obstruction at one strait, but not be sufficient to overcome the resistance of a pelvis narrowed at both extremities.

In some cases natural delivery has been successfully accomplished when there was a contraction to 3.75 inches, but with an ordinary sized fetus the labor is more difficult, and consequently more dangerous. A fetus of average size could seldom be delivered through such a pelvis, so that a maximum for our guidance in determining the propriety of induction of labor can only be approximate. The same may be said in regard to a minimum. Children have been born through pelves measuring 2.25 inches (M. Depaul). The measurements, then, must vary with the size of the child, and the amount of compressibility of the fetal head, and these points cannot always be exactly determined. It is impossible to determine exactly the size of the fetal head, and in the determination of the diameters of the pelvis we can only make approximations. Even the most approved instruments do not give exact measurements, and under all these uncertainties the question is to be determined for each case by itself. The circumstances of individual cases are so various, that it is impossible to lay down strict rules for their

management. We may agree upon general principles, but, at last, each case must be examined and decided on its own merits, under the lights of our experience. As the induction of premature labor is mostly called for in parous women, we have in a majority of the cases the history of previous deliveries to assist us. The induction of premature labor is seldom called for in primiparæ.

As approximations we may take for the extremes 3.5 and 2.5 inches. Between these the interest of both mother and child will call for the operation before the full period of gestation. Spiegelberg places the maximum at 8 c.m. (3.15 inches). He says that the resort to artificial induction of labor is of doubtful propriety when the contraction is not below that measurement, and even then it is not to be performed unless there is reason to suspect from the circumstances of previous labors that the infant may be of large size, the cranium unyielding, and the presentation unfavorable.

In some cases in which several previous deliveries have been attended with loss of life of the child because of its large size, labor should be induced before term, although the conjugate may measure more than the maximum above stated. In illustration of this class of cases, I give the following:

CASE I.—Mrs. —— is a woman of small stature and very small frame, about twenty-three years of age. She was a patient of Prof. Wm. B. Davis, of Cincinnati, by whom I was called in consultation in two labors preceding the one in which labor was induced. In the first confinement, at the time I was called, she had been in labor twenty hours. Uterine action had been vigorous for most of the time, but was beginning to fail. The membranes had been ruptured several hours, but the head, which presented by the vertex in the O. L. A. position, had made no descent into the pelvis. Chloroform was administered by Prof. Davis, and the Elliott forceps applied without a great deal of difficulty, but I was unable to advance the position of the head. It was then determined to resort to version, or, in the event of the child being dead, to perform craniotomy. On introducing the hand, it was found that the fetal pulsations had ceased, and the perforator was used. After a reduction of the size of the head, the forceps was again applied to the base, but the body could not be brought into the pelvis. I then turned and delivered an enormous child. Its exact weight was not determined, but I think it was as large a child as I ever saw.

Eighteen months later she was again in labor, and I was again called to Prof. Davis's assistance. The patient had been in active labor for several hours without making progress. The vertex presented in the O. L. P. position. The forceps was applied under anesthesia, but to no effect. Version was then performed, but it was with much difficulty that the head

was brought into the pelvis. Forceps was reapplied and the head extracted, but the child was dead. The weight of this child was less than the first, but it was a large child.

If a mistake was made in this case, it was in not resorting to version at first instead of applying the forceps. The delay was at the superior strait, and was due to the relative disproportion between the fetal head and the pelvic brim. The advantages of version in such a case are, first, that the soft parts of the child better prepare the maternal parts for delivery of the head; second, that the after-coming head can be delivered through a narrower brim than the fore-coming head; third, that the forceps occupies a faulty position, being applied to the forehead and occiput; fourth, that the compression produced by the forceps increases the biparietal diameter, which corresponds with the contracted conjugate. These are criticisms easier made now than at the time, but with so large a child I doubt whether it could have been delivered alive through the pelvis by any means.

The next year conception had again occurred and it was determined, in view of the experience in the first two pregnancies, to resort to induction of labor some time after the seventh month, the exact time to be determined by the estimated size of the fetus as the gestation continued. At about the thirty-third week of pregnancy, as nearly as we could determine, labor was induced by Krause's method. At four o'clock in the afternoon an elastic bougie was introduced about seven inches into the uterus between the membranes and the posterior uterine wall, where it remained until labor was fully established. Labor pains began in sixteen hours, gradually increased in severity, and in six hours delivery was safely accomplished without very great difficulty. The weight of the child at birth was five and a half pounds. Lactation was soon established, and the child did well. It weighed nine pounds at six weeks of age, and twenty-two pounds at nine months. It is now a vigorous, healthy child.

A possible criticism in this case might be that labor was induced slightly earlier than was necessary. We estimated the antero-posterior diameter of the pelvis to be a little over 3.5 inches, but with the history of the preceding deliveries of children of such unusual size we thought it not safe to defer action to a later period. The severe pains necessary to effect delivery, and the size of the child, so much beyond the average weight at that period of gestation, lead me to believe that delivery could not have been successfully accomplished if much longer deferred.

The time at which labor should be induced will depend principally upon the size of the pelvis. We must keep in mind the general fact that each day of intra-uterine life increases the chances of survival of the infant, and, therefore, we must not be too hasty in operating nor must we, on the other hand, postpone it until the

child is too large and the head too firmly ossified for safe delivery. Each day of delay, after the limit of safe delivery, adds to the danger to both mother and child—to the child because mutilation is more frequently required, and to the mother because the difficulties of mutilating operations increase with the increasing disproportion between the fetal head and the pelvis. Ritgen, M. Figueira, and others have made measurements of the fetal head at different periods of gestation, and, from these, tables have been prepared for our guidance in determining the time at which labor should be induced.

Beginning at the seventh month, the earliest time at which labor should be induced, the biparietal diameter, which in cases of antero-posterior contraction must correspond with the conjugate, is 2.75 inches. Allowing for some compression of the head in consequence of incomplete ossification, a fetus at seven months could safely pass through a pelvis measuring 2.25 inches; hence, with that amount of contraction, the induction of labor should not be delayed much after the end of the seventh month. There seems to be a general consensus of opinion that if the conjugate is 2.5 inches, the time of election should be about the thirtieth week. Starting from this point, it might be stated in general terms that for each quarter of an inch increase in the size of the pelvis one week may be added to the time that gestation may be permitted to continue.

This general estimate of the time as dependent upon the size of the pelvis does not exactly conform to the calculations of Ritgen, whose estimates would call for operation one week earlier. One writer, M. Busch, a number of years ago, fixed upon the end of the twenty-eighth week as the proper time for inducing labor when the conjugate is 2.75 inches. This is certainly unnecessarily early when the pelvis is of such dimensions. It might, with safety, be deferred three weeks.

There are some exceptions to the rule given and to the tables published, fixing the time of operation in different degrees of deformity. Primiparæ generally bear smaller children and might be permitted to go a week or two longer.

There are two difficulties in these cases. One is in determining the period to which gestation has advanced. But, counting from the date of last menstruation and from the period of quickening, a sufficiently accurate estimate can generally be made. In cases of doubt,

when the pelvis is so contracted as to call for operation early in the seventh month, it is recommended that two weeks be added to the time that gestation may continue in order to prevent too early delivery of the child. The other difficulty is our inability to determine exactly the diameters of the pelvis in the living subject. Pelvimetry is not an exact science, but a well-practised finger will give sufficiently accurate information.

What has been said in regard to the induction of labor in contracted pelvis, applies as well to cases where the genital canal is so narrowed by tumors connected with the pelvic organs or with the pelvic walls, that a child cannot be born at term.

The induction of labor is called for in some conditions entirely unconnected with pelvic distortion. Cases occasionally occur in which pregnancy is associated with various constitutional diseases, in such a way as to render it incumbent upon the physician to induce premature labor, with the view of saving the patient's life or of mitigating great suffering. It is difficult to specify all of the conditions in which the operation is justifiable. In general terms, it may be stated that when the life of the mother or child is imperilled by continuance of pregnancy to term, by complications due to or aggravated by pregnancy that can be removed by delivery, the induction of labor is not only a justifiable operation, but is a duty of the physician. A few of these conditions may be referred to.

Unavoidable Hemorrhage.—A condition in regard to which there can be but little difference of opinion as to the propriety of resorting to induction of labor, is unavoidable hemorrhage. This is the second condition in point of time for which it was performed. This is the only condition in which Baudelocque made any exception to his rule of condemnation of artificially induced labor. In the *London Practice of Midwifery* is the following aphorism in regard to unavoidable hemorrhage: "He that determines to deliver early has determined that his patient shall not die." Cases of accidental and unavoidable hemorrhage are often so urgent that labor must be induced for the sake of both mother and child. I think there is as general agreement in regard to resort to the operation in these cases as in cases of contracted pelvis. Dr. Thomas urges rapid induction of labor in placenta previa, as we then have better chances of saving both mother and child, for we will then be dealing with a woman not exhausted by hemorrhage, the obste-

trician can be present at the beginning of labor and be better prepared to control flooding, while the pressure that controls the hemorrhage dilates the os. The following is a case in point.

CASE II.—Mrs. B., a multipara, to whom I was called July 1, 1888. On my arrival at the house I found that she was bleeding profusely, but labor pains had not been felt. She had not expected labor until the latter part of the month. It was her opinion that she had advanced about one week in the last month of pregnancy. She had had a hemorrhage six weeks before, but not so profuse as now.

Recognizing the case as one of placenta previa, a vaginal tampon was inserted, which arrested the bleeding. In two hours slight labor pains were felt. They gradually increased in severity, and at times it became necessary to introduce more cotton to control the bleeding. In seven hours, the pains becoming energetic, and the hemorrhage recurring, Prof. Mackenzie, who had been called to my assistance, gave an anesthetic, and I removed the tampon. Finding the os sufficiently dilated to permit version, I separated the placenta at its posterior border sufficiently to permit the introduction of the hand to the upper part of the uterus, when the membranes were ruptured and the feet brought down. Speedy delivery of a living child followed. The recovery of the mother was slow, owing to the great loss of blood.

In this case I was not called upon to induce labor, but to a woman bleeding before she had experienced any labor pains. The treatment which I regarded as best calculated to arrest flooding was that sometimes resorted to, to excite uterine action, and in this case a double indication was fulfilled by the tampon. The prompt action in this case and the delivery of a living child, were fortunate circumstances in a condition well calculated to excite the gravest fears. If labor had been induced before the occurrence of the second hemorrhage, much blood might have been saved to the mother and a source of danger to both mother and child avoided.

PUERPERAL CONVULSIONS.—In eclampsia, with or without albuminuria, when the attacks are so severe or frequently repeated as to threaten life, and the means usually invoked to arrest the convulsions have failed, the operation is indicated. In regard to this, however, there have been and still are some differences of opinion. Some writers go so far as to advocate the induction of labor in cases of persistent albuminuria, although convulsions may not have occurred. Simpson reported to the Edinburgh Obstetrical Society that he had induced labor in a case of pregnancy, on account of extreme dropsy and dyspnea with albuminuria. The patient

who was apparently dying at the time, made a speedy recovery. Chailly, Krause, Tarnier, and others have advised premature delivery in these cases. Playfair says, "I should not hesitate to adopt this resource in all cases in which the amount of albumen is considerable and increasing, and in which treatment has failed to lessen the amount; and, above all, in every case attended with threatening symptoms, such as headache, dizziness, or loss of sight. The risks of the operation are infinitesimal compared with those which the patient is running in the event of puerperal convulsions supervening, or chronic Bright's disease becoming established. As the operation is seldom likely to be indicated until the child has reached a viable age, and as the albuminuria places the life of the child in danger, we are quite justified in considering the mother's safety alone in determining on its performance" (*Science and Practice of Midwifery*, 3d Amer. ed., p. 201). This is stronger advocacy of the operation than we generally find among *American* writers. Dr. Fordyce Barker, in an article in the *American Journal of Obstetrics* for July, 1878, opposes the induction of labor in albuminuria until after appropriate treatment has been thoroughly and persistently tried without success, and the symptoms are so grave that there is strong probability of the death of the mother. Convulsions do not always occur when albuminuria is present, or, if they occur, they may not cease on completion of labor. Again, cases are recorded of subsidence of albuminuria and convulsions under treatment, and the women have gone to full time and been delivered without convulsions returning. The occurrence of convulsions is not, in my opinion, a justification for resorting to induction of labor until all other means have been exhausted. If the labor can be deferred and treatment addressed to the renal disturbance which is present in almost all of these cases, the condition of the mother may be so far improved that delivery may take place with perfect safety and freedom from convulsions. To induce labor in such a case is often to add fuel to the flame. To the irritations which have excited the convulsive attacks are superadded the pains and exhaustion of labor. Cases in which induction of labor may be demanded by puerperal convulsions are of extremely rare occurrence. So experienced an obstetrician as H. L. Hodge said, as late as 1866, that he had not yet seen one case. Still there are exceptional cases where pregnancy is so far advanced that the child would encounter

but little risk, in which the operation might be of advantage. It ought not to be absolutely discarded.

Persistent Vomiting.—In the persistent vomiting of pregnancy there has not been general consent as to the propriety of the operation. The weight of authority seems to be against it. It is certainly seldom to be sanctioned. Fortunately, cases of continuance to the period of viability are of rare occurrence. So rarely does this condition prove fatal that, if the principle were sanctioned, the dangers to mother and child of artificially induced labor would result in the aggregate in greater loss of life than is occasioned by obstinate vomiting. So great is the distress of the patient and so urgent the solicitations of her friends, who are anxious only for her safety, that the physician may be tempted to yield his judgment to their importunities. If, however, all of our resources fail to give relief, and the life of the mother is threatened, premature labor may be induced.

Acute and Chronic Diseases.—The operation has been recommended and performed in a number of acute and chronic diseases, where pregnancy has endangered the life of the mother and where the end of gestation would enhance her chances of recovery—as acute dropsy, alarming hemorrhage from the bowels, heart disease, severe chorea, mania dependent upon pregnancy, and some other nervous disorders.

In some chronic affections which are necessarily fatal, sooner or later, to the mother, in which there are serious symptoms, the operation has been resorted to, but, in my opinion, improperly unless the disease is so favorably affected by the termination of pregnancy that the mother's life can be considerably prolonged.

In hydramnios and abdominal tumors causing great distention, it is sometimes required. In these cases premature labor sometimes comes on spontaneously.

In rapidly growing carcinoma and epithelioma of the uterus it may become necessary.

My limits will not permit me to consider at full length the propriety of the procedure in all of the morbid conditions in which it may be required, nor is it necessary if we keep in mind the general statement already made, that when the condition of the mother or child renders the continuance of pregnancy to full term dangerous to both, or to either of them, and the danger can be removed by

delivery in the seventh or eighth month without the substitution of a greater danger, the induction of labor is a justifiable procedure. If the operation is not indicated to save the life of the mother or child, it is criminal.

Methods of Induction.—The propriety of resorting to induction of labor and the time at which it should be done having been determined, the next question is: By what method can uterine action be started with greatest certainty and the least risk to the life of the mother and child? This is an important question. Upon its determination may depend the success or failure of the case. The operative procedure should be simple and safe, and the one that most surely induces uterine action without impairing the integrity of the ovum, is the one that will be safest for both mother and child. The more nearly artificial labor is made to correspond to natural labor the more likely is it to be successfully accomplished. It should go on as quickly as compatible with safety to the patient, and after action is excited it should not be hastened by further artificial means, except when the interest of the mother or child demands them. The indications for interference or assistance in these cases would be the same as in labor at term, keeping in mind that we are dealing with a child of low vitality, and that the operative procedures, such as version or use of forceps, would be more likely to result unfavorably than if the fetus had arrived at the full period of gestation. The physician who undertakes to induce labor owes to his patient his entire time, and the only attentions she should have at his hands should be those intended to conduct the labor most safely to a successful termination.

There are numerous methods of inducing labor, and great improvements have been made in them in the last few years. The choice of methods will, to some extent, depend upon the condition calling for the operation. A method applicable in contracted pelvis would not answer in a case of hemorrhage. The choice is not a matter of indifference. Some are safe but uncertain; some are certain but unsafe.

They may be divided into three general classes:

1st. Those supposed to excite uterine contraction by acting through the general system.

2d. Those acting by reflex irritation by excitation of some other organ, as the breasts, rectum, etc.

3d. Those acting directly upon the uterus.

Oxytocics.—Of the *first* class, ergot, cotton root, quinine, savin, rue, pilocarpine, and some other drugs, have been used. These are very uncertain, unpleasant, and unsafe. All oxytocic medicines are dangerous to the mother and child. If they have the power to excite uterine action, it is a tonic contraction not resembling uterine action in labor. Ergot was the medicine formerly most used, but its use is abandoned for exciting premature labor. Its use in labor at any time, is not, I think, admissible, except, *perhaps*, in the third stage,—certainly not until the maternal parts are in a condition that delivery can be soon completed if the uterine contractions are not effective. Quinine has also been recommended, but while it has the power of increasing uterine action when started, it cannot awaken it. Pilocarpine, first recommended by Schauta, of Vienna, is the newest agent of this class, but it is very uncertain as a means of exciting action, is attended with great distress, and sometimes gives rise to symptoms of poisoning. We may pass by all internal remedies that have yet been named as unsafe and uncertain.

Of the *second* class, it may also be said that they are uncertain. Scanzoni was induced to try excitation of the breasts by blisters, rubber suction-bulbs, etc., to excite uterine action from observing the active sympathy between the breasts and the uterus. This method has failed much oftener than it has succeeded, is painful, has excited mammitis, and has been correctly classed as "unscientific."

Electricity.—Of the *third* class of agents, those acting directly upon the uterus, there have been many suggested. Some are slow in action, some uncertain, and some are attended with danger. Direct stimulation of the uterus by electricity—galvanism and faradism—has been recommended, and a certain measure of success has attended its use; but if used strong enough to be surely effective, it may be dangerous to the child. Killian, Schrieber, M. Dubois, and many others have used electricity without success. Schreiber has tried galvanism. Dorrington and Simpson used electro-magnetism, Henning used faradism, but the weight of testimony seems to be against their reliability. Baird speaks very highly of faradism as a stimulus in uterine inertia, but whether it will be found to start true labor pains is yet uncertain. Experience has not borne out the hopes at one time entertained for the various forms of electricity.

Tampons.—Another method is by excitation of the cervix by means of tampons in the vagina. Cotton, bladders and rubber-bags filled with water, have been used, and this method has its advantages in some cases. They are especially useful in those cases in which labor is to be induced for arrest of hemorrhage, having the advantage of arresting bleeding at the same time that they excite uterine action and produce dilatation of the os. In cases of placenta previa they may be resorted to either alone or in connection with other methods of exciting labor.

Kiwisch's Method.—Hot water injections into the vagina were introduced into obstetric practice by Kiwisch. These douches were used somewhat warmer than the temperature of the body. They are very uncertain in the time required to excite uterine action, and sometimes fail altogether. They can be made more effective by using alternately hot and cold water.

Dilatation of the Cervix.—This has been resorted to by many obstetricians. It was first effected by means of compressed sponge. Berninghausen was the first to suggest it, but Kluge first practised it, and it is sometimes spoken of as Kluge's method. Simpson was the first to use this method in Great Britain. It has its advantages and disadvantages. It is speedy in action and keeps the membranes entire, but the introduction of the tents is not always easy, their action causes much pain, and as they favor rapid decomposition of the secretions, and cause more or less abrasion of the mucous membrane, they are attended with risk of septic infection. Metallic dilators have been used, and by their use the last objection to sponge-tents has been avoided, but they are painful and liable to rupture the membranes. Barnes has recommended the dilatation of the cervix by means of rubber-bags introduced in the os, and distended with water by means of a syringe These instruments not only excite uterine action, but they dilate the os, and the process is made closely to resemble natural labor. While, perhaps, not the most desirable method of exciting labor, the dilators are of great service in dilating the os after the uterine action is set up, and they will find a place in many cases, more to accelerate than to initiate labor.

Cohen's Method.—A method first suggested by Schweighauser, of Strassburg, about 1820, but first tried about forty-two years ago, by Cohen, of Hamburg, whose name it bears, consists in the injec-

tion of a small amount of water, at about the temperature of the body, between the membranes and the uterus by means of a syringe holding about an ounce to an ounce and a half. This method possesses the advantage of exciting labor so gradually as to dilate the os before the membranes are ruptured, but it is not free from danger. It is prompt in action in most cases, but sometimes requires repetition. It acts by separating the membranes, which awakens uterine contractions. The injection of air and carbonic acid has been resorted to for the same purpose.

Hamilton's Method consists in detaching the membranes by passing the finger through the os, and sweeping it around the lower portion of the uterus.

In *Mampe's Method* a bougie is used instead of the finger.

Lehmann, of Amsterdam, proposed and practised induction of labor by passing a bougie eight or ten inches into the uterus and immediately withdrawing it, the introduction being repeated if labor is not started within a day or two.

The last three methods excite labor in the same manner as Cohen's—by separating the membranes from the uterine walls. They are safe, if care is taken not to rupture the membranes, and are easy of execution, but they are not prompt in action. In one case I have known Lehmann's method to fail where Cohen's afterward succeeded. These methods are not adapted to cases in which the operation is done for hemorrhage.

Krause's Method.—Krause, of Dorpat, has suggested the use of flexible catheters or bougies, to be introduced into the uterus between the membranes and uterine walls and permitted to remain there until the uterine action is excited. This is superior to Cohen's method. It is more certain in its action, is not difficult of execution, but must be done with care lest the membranes be ruptured. It is not applicable to cases of hemorrhage unless associated with plugging the os or vagina.

Scheele's Method.—The method usually had recourse to fifty years ago, and on which great reliance was placed, was the sudden evacuation of the liquor amnii. It never failed to bring on labor, but the time varied from a few hours to a few days. Gradual evacuation of the water was also resorted to, but the former method was generally recommended for the reason that the sudden evacuation was more likely to excite brisk action.

These methods are unsafe because of the increased difficulty and danger in cases of too early rupture of the membranes. The danger of some of the other methods named, is their liability to interfere with the integrity of the ovum before the dilatation of the os has taken place.

From this brief mention of the methods of exciting uterine action, we see that there are many of them. I have not named all, but I have referred to most of those that have at different times been most relied upon.

The safest, and generally the simplest, methods are those by which the dilatation of the os uteri is effected slowly and gradually while the membranes are entire. Those methods that have for their object the rapid dilatation of the os and cervix are unsafe, and generally unnecessary.

It is important to get the child to present at the superior strait by the head and have it delivered by a head presentation, if a natural delivery can take place. If assistance is required and a choice is to be made between forceps and version, the question must be determined by the conditions of the particular case—conditions which it is not within the scope of this paper to consider.

The method to which I would give preference, except in cases of hemorrhage, is that of Krause, a flexible bougie in the uterus, to be followed, if necessary, by dilatation of the os by Barnes's dilator. In a case attended with hemorrhage, I would resort to plugging the vagina and after sufficient action has been excited, would introduce a Barnes's dilator into the cervix.

After labor, the child will demand especial attention. It must be kept warm continuously by artificial means. Its circulation is feeble and the bath usually given to newborn children *must be omitted.* The body may be rubbed with warm lard, warmly clothed, and kept in a room the temperature of which is uniformly high. Early feeding should be resorted to, the mother's milk, or that from some other woman, being drawn by a pump and fed to the child by means of a spoon until it has sufficient strength to nurse.

DISCUSSION ON THE PAPERS OF DR. CORDES AND DR. STANTON.

Dr. A. Lapthorn Smith, of Montreal.—I wish to speak briefly upon this important subject. We should lay down three principles to guide us in these cases when there is difficulty in coming to a conclusion regarding them. Puerperal convulsions are due to mechanical pressure on the renal veins. If that remains too long, it will bring on uremia. Uremia continued long enough, produces permanent damage to the brain. We should empty the uterus and take the pressure off the renal veins at the earliest moment we are sure such a condition exists. Having acted for two or three years upon this plan, I have no cause to regret it. My only regret is that for five or six years I adopted the method of waiting. Although none of the patients died, all of the children did, and one of the patients was in the asylum several years. If premature delivery is brought on under antiseptic precautions, we will, in all cases, save the woman and save her brain intact, and occasionally save the child, though the child is of secondary importance.

I wish to urge the induction of premature labor in bad cases of uncontrollable vomiting in pregnancy. I have found records of eighty cases of death in this comparatively simple condition. I was called in to one such case where I considered it necessary to induce labor, as the lady was delirious and evidently in great danger; and it was done without any unfavorable symptoms whatever, strict antiseptic precautions having been taken. In twenty-four or forty-eight hours from the time the delivery was completed, the woman regained consciousness and made a good recovery. I know of a large family of beautiful girls in Montreal, every one of whom was born at seven months, by induced labor, their mother having a contracted pelvis, and her first child having succumbed during labor at nine months.

Dr. Stanton asked Dr. Smith if bringing on labor was not adding fuel to the flame. If it was not better to defer as long as possible the production of labor and treat the renal condition; for we know that convulsions do not always cease at delivery?

Dr. Smith replied that we should not wait until the woman has convulsions. If you know the urine is loaded with albumin, bring on labor without delay; every moment of delay increases the danger. The best treatment for the renal condition is to take the pressure off the veins, which causes the congestion of the kidneys.

Dr. Joseph Price, of Philadelphia.—There is a great deal of wisdom in the remarks of the last speaker. I will simply state one case out o

quite a number in my own experience. Mr. Tait calls attention to the frequency of such troubles in elderly primiparæ. It is exceedingly common in that class of patients. I was summoned to Germantown to see a patient thirty-eight years old, married two years. At the seventh month of pregnancy she was enjoying excellent health; was watched by a very careful practitioner. There was no albumin in the urine or other indication of approaching mischief. At eight months, she began to suffer with edematous feet, headaches, disturbance of vision, and puffy face. Her physician wrote to me that he feared convulsions, and would like to have me see the patient. Shortly after, he telegraphed that "she had symptoms of approaching convulsions; to come on the first train." A specimen of urine, secured only by use of the catheter, was found solid with albumin. In the interest of both mother and child, we agreed, after some preparation, upon the induction of premature labor. This preparation I consider of paramount importance in such cases of approaching eclampsia. We agreed upon the use of a hydragogue cathartic, also bromide of potassium and hydrate of chloral. Her brain and blood, and particularly her kidneys, were relieved of this puerperal poison. I then introduced a catheter and thus provoked labor; applied forceps and delivered the child. Her urine cleared up rapidly, and no further brain symptoms appeared. Both mother and child were saved. This is related simply as a typical case, and I could cite a number of other cases treated by Dr. Goodell in an institution which I now have charge of, cases prepared in a similar way in which labor was induced, and mothers and children were saved. I would emphasize the importance of this careful preparation and early induction of premature labor in cases due to mechanical pressure.

Dr. Clark, of Cambridge, Mass.—I consider emptying the uterus one important thing in eclampsia. I was called, not long ago, in consultation to see a patient, and found her in convulsions. She was then at about the seventh month of pregnancy. She was given ether and, after dilating the os uteri, we were soon able to effect delivery. Previous to that we had used the subcutaneous injection of morphia (one-half grain), which was repeated some time after delivery. What seemed to relieve her most was one-sixteenth grain pilocarpine. It was a long time before she recovered her sight. I am in favor of treating these cases early with saline laxatives.

I am glad Dr. Smith has referred to the subject of premature labor in cases of persistent vomiting of pregnancy. Two years ago I was called to attend a woman who was seven months advanced in pregnancy, and who was suffering so severely from uncontrollable vomiting that her life was despaired of. The patient was twenty-eight years old, and this

was her first pregnancy. She was very much emaciated, and the chances of her having a living child seemed very small, whether premature labor should be induced or not. The same opinion was held by my consultant, and the operation for the induction of premature labor was advised. A soft elastic bougie (No. 14 French scale) was introduced without rupturing the membranes, and passed across the fundus of the uterus in a spiral or curved direction, and left for twelve hours, when labor supervened. The labor was completed in five hours, and the infant was born alive and did well. It was kept in a room in which the temperature was maintained at nearly 100° F. There was some delay in bringing away the placenta, but I tamponed the uterus and vagina. There was no hemorrhage of consequence. The vomiting immediately ceased and the patient made a good recovery. In the *Journal of the American Medical Association*, vol. iv. p. 97, I reported three cases in which premature labor was induced at the seventh month of utero-gestation. The pelvis in each case was narrow and distorted. In one of the cases the conjugate diameter was hardly two and one-half inches; in the other two the conjugate diameters did not exceed two and one-half inches. In the first two cases carbolized sponge-tents were used. In the third case an olive-tip bougie (No. 14 French scale) was used in the same manner as it was in the case of vomiting of pregnancy. The use of sponge-tents I have long since discarded. The bougie is to be preferred, especially when supplemented with digital dilatation. The bougie is also useful in cases in which abortion is imperatively demanded. With its use labor usually comes on within twelve or fourteen hours, and is easily kept under control. In each of two cases above reported the child was born alive and did well. In one of the cases, however, the fetus was feeble and died on the third day; the mother recovered. The child in each of the previous pregnancies had been lost. Some fifteen years ago I was called to attend a woman who had been pregnant five times, and at each of her confinements, all occurring at term, the child was not born alive. At each confinement a different physician had been called. At this labor, which was at term, Dr. Marcy was also called. We found the child was large, the pelvis of the woman was narrow; the promontory of the sacrum projected unduly forward, and the tuberosities of the ischia closely approached each other. We did not succeed in saving the child. We advised that in the next pregnancy premature labor should be induced. This advice was accepted, and, accordingly, in the next pregnancy, about the seventh month, I was called and induced premature labor. A male child was born alive and did well. In the next pregnancy premature labor came on spontaneously about the seventh month and the child lived. In a subsequent preg-

nancy measures were instituted to hasten the labor before the close of the seventh month, and the child was saved. I should here remark that in one of the pregnancies previous to my being called the woman had "nearly starved herself," as she said, with the hope of lessening the size of the child; but this, of course, was unsuccessful. Ergot has been referred to as an oxytocic for inducing premature labor. In the cases I have mentioned it was not indicated, and had it been employed I believe it would have been productive of much harm. In cases in which the induction of premature labor has been demanded on account of placenta previa I have found ergot was of very little value. More reliance was placed on the tampon and the employment of manual dilatation and opiates. Mention has been made of providing a warm room for the child when prematurely born; I always insist on securing this. The temperature of the room for the child should be as near 100° F. as possible.

Dr. Opie, of Baltimore.—The subject presented by Dr. Stanton is one of deep interest to the obstetrician. A careful study of the best methods of inducing premature labor would greatly reduce the fatality in delivery through contracted pelvis. The main point in such cases is to deliver the child alive.

Prominent among the indications for premature delivery are eclampsia and uterine hemorrhage. We have here two conditions requiring altogether different management.

In pelvic deformity we may adopt the plan of using an elastic catheter or bougie as suggested by Krause, or that of Tarnier; but in eclampsia, uterine hemorrhage, and other emergencies, our method must be expeditious. Under no circumstances do the plans of dilatation by tampons, sponge-tents, and drugs seem to be judicious.

In the first class (pelvic deformity) advantage is taken of that period of intra-uterine life when the sutures are yet wide, the bones are undeveloped, and moulding can be best effected as the head passes through the straits.

Nature is wonderfully ingenious under the *vis a tergo*, whatever the presenting part may be. If there is slight contraction, more time is required than under normal conditions; if the contraction is great, the time must be lengthened; if very great, or the patient has gone to full term, it may be impossible to deliver the child alive. We often, after labor, find out from the shape of the head what has been the direction of the forces and the causes of delay. We are at no disadvantage, even should we have to resort to the forceps, since moulding can be effected here in a much better way in premature cases than at full term.

In the second class of cases, I think many mistakes are made and lives lost by temporizing and delay.

At this time two cases come up in my memory. I was called as consultant to see a patient who had had several uremic convulsions. The amount of albumin in her urine was eighty per cent. Immediate delivery was advised. This opinion was not shared by the physician in charge, whom I met. It was referred to the family, and they refused to have it done. A more conservative consultant was called in my stead; non-interference was decided upon, and the mother and child were lost.

I met, not long after that, a similar case. Before my arrival there had been one convulsion. The attending physician informed me that the woman's urine almost solidified under tests for albumin. I urged immediate delivery. The attendant did not agree with me, but asked me to meet him later in the day. Just as we were parting at the front door the nurse announced that the patient was in a strong convulsion. There was no longer a difference of opinion. Delivery was quickly effected. Not a single bad symptom occurred to either mother or child.

The speaker referred to the recent modes of dilating as being extremely dangerous. It has not been my experience that the operation of dilating the uterus is either difficult or dangerous. Ordinarily, if the cervix is tightly closed, I used hard-rubber dilators, then Molesworth's or Barnes's dilators, until I can get in two fingers, when I know I can introduce Taylor's narrow-blade traction-rod forceps, and draw the head down upon the cervix and along the axis of the parturient canal. The cervix open, Tarnier's latest forceps is preferable to complete the delivery.

I desire to reiterate what Dr. Stanton has so well said about ergot. One is sometimes surprised at the stolid indifference with which some members of our fraternity view all progress and improvement. There are but few drugs concerning which there is more certainty as to their therapeutic effects than ergot. That it causes continuous tonic and uncontrollable contraction of the muscle fibre is not to be doubted. It follows, therefore, that it should meet with unqualified condemnation whenever there is any part of the child or secundines in the cavity of the uterus.

I have seen disaster follow the use of sponge-tents, and so many such cases are upon record, that this plan of dilating, as well as that of Kluge by cones of prepared sponge, should be abandoned. There is no doubt of the efficiency of sponges in dilating the cervix and inducing contractions, but, however carefully prepared, the danger of septic infection is too great. The sponge interdigitates with the mucous membrane, and leaves on withdrawal an extensive raw surface exposed.

Dr. W. W. Potter, of Buffalo.—I did not at first expect to participate in this discussion, but Dr. Price has kindly opened up a channel of

thought that is agreeable to me, because he has referred to a method that has been successful in my hands.

I have already induced premature labor in puerperal coma or convulsions several times successfully—never unsuccessfully—and most of the cases have already been published. But I have recently seen a most interesting and desperate case of puerperal coma, relieved by the induction of labor, which has not yet been published, and which I will briefly and concisely relate.

On the third day of June last I was called to see an interesting young woman, not yet a year married, who had been in an almost uremic stupor for several days, not absolutely comatose, but verging toward it. She was then nearing the end of the eighth month of pregnancy. I saw her and induced labor, calling Dr. Charles G. Stockton as a consultant beforehand. We delivered her on the morning of the 4th of June, about sixteen hours after the beginning of the induction process.

She was unconscious of her maternity for nearly two weeks afterward. The child weighed three pounds and a half, or thereabouts, and was nearly cyanosed at birth. For two weeks or more the patient remained in a semiconscious condition, rousing up when spoken to, but immediately relapsing into a sound sleep. Her entire body—face, trunk, and extremities, both upper and lower—were edematous to an extreme degree. Her urine was well-nigh solidly albuminous. It was five or six weeks before she convalesced sufficiently to be able to ride out, and a still longer period before she could walk without discomfort. She has now fully recovered, and the child is growing to be a plump, handsome baby; but she never had a drop of milk from the first. There was no appearance of a milk secretion in the mammary glands, nor any fulness in the mammæ beyond that belonging to a plump development—certainly no attempt on nature's part to furnish the ordinary food for the child. I might have mentioned that we preceded the induction of labor by the injection of a grain of morphia, hypodermatically administered.

I have related this case in part as a parallel to the remarks of Dr. Price, and corroborating his views, but particularly to insist upon the fact that we should not always wait for absolute convulsions before inducing labor. The point that I desire to make is, that there are now and then cases in which uremic coma is unmistakably approaching, and in which the urgency of the symptoms is such that it is unwise to wait for the full eclamptic seizure, which is assuredly approaching. It is my opinion in this case, and I believe Dr. Stockton will support me in this, that our patient would have certainly died had we delayed the induction of labor much longer.

In regard to the views expressed by Dr. Cordes in his paper, I am not prepared to oppose them, because I am sure there is much soundness in his position with regard to the management of puerperal eclampsia. I feel sure, however, that one almost certain way to arrest the progress of the disease is to take the pressure off the renal emulgent veins by the early induction of labor.

IS THE FREQUENT USE OF FORCEPS ABUSIVE?

By THOMAS OPIE, M.D.,
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THERE is a remarkable unanimity of opinion, in the teaching of recent text-books, medical journals, and medical societies on this subject. If we may estimate popular sentiment by this criterion, it favors the more frequent use of the forceps and condemns what is sneeringly called the "expectant" management of labor. So general is this opinion among writers and teachers in the obstetric field, that one, after a casual review of the question, would be reluctant to oppose it, accepting that what everybody affirms must be true.

Impressed by the current opinion, I at one time advocated this practice. A careful analysis of my obstetric work, and, as far as I could get an insight, that of others, especially when viewed from the recent standpoint and clear light of gynecology, has forced upon me a strong conviction, that the forceps is used too frequently and with more damaging results than has been supposed.

I feel quite certain all present will agree that there is forceps abuse. I desire to give prominence to the subject. I do not mean to inveigh against the judicious use of the forceps, but to urge that there is harm done, not only by the unskilful but the skilful, in their too frequent use. The axiom "meddlesome midwifery" once had a healthful and restraining influence, but it has lost its force from age and repetition, before the clamor for the forceps. We seem to be drifting away from the precept, "aid and abet nature," to the position of "ignoring and interfering with her processes."

The derivation of the word forceps conveys the idea of power, strength, seizure. The very name of this wonderful instrument, therefore, was suggested by its most striking characteristic, its prehensile power.

Nature, when at her relative *norm* in childbirth, provides a vital power precise in its amount and aim for the varying needs of the

individual, which acts as a *vis a tergo* and unaided expels the child. At other times she seems greatly at fault, her powers are inefficient, and the physician is called upon to supplement her deficiencies. Prior to the year 1700 the science of obstetrics was unborn. The only help for women in the perils of childbirth was that derived from ignorant midwives. At this time the obstetric forceps was given to the profession and to humanity. Men assumed charge of the instrument and the confinement of women.

Three distinct eras may be traced in this branch of medicine having their pivotal influence in the forceps. First, the introduction of the original forceps in 1700. Second, the important invention by Levret, of the pelvic curve, in 1747; and third, when in our own times, 1877, Tarnier devised the traction-rod attachments to the forceps.

This instrument has been of the greatest benefit to mankind; the horrors and fatality of labor without it would have been incalculable. It has received from medical writers more titles of nobility, praise, and endearment for its life-saving powers, than any instrument that was ever invented. It belongs, however, to the early history of the forceps, that its sovereign power was so much abused that the question as to whether it did most of good or harm, was stubbornly contested.

If one will revert to the rude state of the obstetric art prior to the year 1791, when Baudelocque first arranged methodically the pelvic positions and presentations of the child, when the forceps was applied without established rules, he can readily appreciate that this was at least a debatable question. It can scarcely be said, that skill in the use of the forceps existed prior to the beginning of the present century. The application of the blades to the child's head was then a matter of haphazard and convenience. Even in the days of Ramsbotham, there was bitter controversy between the advocates of craniotomy and the long forceps. The majority of English practitioners preferred the former. In the light of history there must have been very great abuse of the powers of the forceps.

A recent writer says: "The forceps are simple in their construction, easy of application, wonderful in power." The successive stages of their development have, on the contrary, made them far less simple in their construction. They are therefore less easy of application.

They have a wider range of use and wonderful powers for life-destroying, as well as for life-saving.

The instruments for the destruction and mutilation of the child have been retreating further and further before the advancing and developing forceps. Podalic version has taken a back seat, and emergencies demanding immediate delivery in behalf of both mother and child are promptly met. Truly there has been bestowed upon us in the forceps a great boon; we have been invested with great power, but there accompanies it great responsibility and dangers to both mother and child.

It is generally accepted that the higher the presenting part, the more difficult and dangerous the application of the forceps. It will go without contradiction that all surgical operations are dangerous. It is equally true that elements of danger lurk about all cases of artificial labor. To substitute traction for contraction, to introduce and use instruments in the genital tract; indeed, to substitute art for nature's peculiar and inimitable methods, is always dangerous.

A formidable catalogue of injuries to both mother and child can be adduced in evidence of the rough and damaging work in obstetrics. The most unanswerable testimony comes from the gynecologists.

Very few practitioners of medicine claim to be qualified for the practice of surgery, and delicate and dangerous operations are relegated to the specialists in this branch; but it is comparatively rare to find a physician who does not think himself competent to manage any forceps case which may present itself and who will not, in view of the present fashion, resort to its powers. If skill in the use of forceps did not exist prior to the beginning of this century, how can we accord this virtue to operators in these days, who are ignorant of the fundamental principles and admirable system upon which the present science of obstetrics rests.

The opportunities of the student of obstetrics have been until recently almost entirely theoretical. The young graduate has no illustrative reminiscences; he is not, as a rule, entrusted with obstetric cases for years. As he grows older this work is intruded upon him and he must slowly, year by year, acquire his experience. Occasionally a young graduate is fortunate enough to obtain residence in a lying-in asylum, where he can secure practical lessons, when as yet his theory is fully at his command. Should he have no training in

touch, and no fondness for the dry details of the mechanism of labor, it is no wonder as an advanced and busy practitioner, he so often makes a medium-rate obstetrician; no wonder if he sneers at the mechanism of labor and refuses to be governed by rules in the application of forceps.

The province of obstetrics has been greatly improved by opening up the relatively new field of gynecology. The good is not only manifest in sewing up its unsightly rents, but it is doing something to be grateful for, as a warning to obstetric operators. I have a recollection of a discussion which took place some time ago, in which a physician with a very large obstetric practice asserted, that in his extensive experience of over thirty years, he had never seen a case of ruptured perineum; being pressed in the debate he was compelled to admit that he had never looked for them.

To obtain the best success in forceps operations presupposes a thorough knowledge of the anatomy of the pelvis and the child's head, and the physiological and mechanical phenomena of labor. It is essential that the operator should have the ability to estimate the symptoms and indications of progress or delay in each case of labor that presents itself. He should be able, by a cultivated touch, to determine the relationship between the body propelled and the passageway at each step of its exit. He is called upon to determine the extent of physical depreciation or impending nerve exhaustion of his patient. He must know how to resist the importune pleadings of a woman urging artificial help when nature needs no assistance. He must be ready to sacrifice self and time to the demands of the occasion, and allow nature to do her best before resorting to the forceps.

To determine between the high forceps operation and version; to decide upon the necessity for the high operation; to diagnosticate or rectify positions above or at the brim; to apply the forceps accurately and conduct safely the little passenger through the genital passage-way, require exquisite skill; indeed, these are among the great achievements of medical science.

The high forceps operation is undoubtedly a critical one, and the operator should be selected with as much care as for an ovariotomy. The low operation is not so simple, especially in primiparæ, as to be left to "any tyro."

Much abuse in the application of the forceps grows out of a want

of clear understanding as to the kind and gravity of the operation to be performed, the style of forceps indicated, and the rules to be observed by the operator. It will simplify and serve all practical purposes to designate the kind of forceps under three heads, according to seniority of invention, viz., the straight (Chamberlyn), curved (Levret), and traction-rod (Tarnier) forceps.

Let us be impressed with the individuality of the two operations. The high operation is associated with the first stage of labor; it is a high, difficult, and perilous operation, only to be decided upon after the most solemn consideration of its responsibilities and dangers. The other is low, within easy reach, and relatively easy of accomplishment; it is much the most frequently performed, and the province in which most abuse lies. In the first, the accidents are more serious and often primarily fatal; in the second, many minor injuries sometimes give secondary disability, and even death occurs.

The traction-rod forceps alone should be used in high operations. It exerts traction in the right direction, requires the exercise of less force, and the mode of making traction through the transverse bar is much more convenient to the operator. There is less risk of slipping, and the head is comparatively free to obey the law of rotation when in transit; in fine, it is safer in high operations than any other forceps, both for mother and child.

The classic forceps should be used only in the low operation. It is very doubtful whether traction rods should ever be used at the inferior strait. The awkward and inefficient mode of making traction with any other forceps in high operations, may well be styled abusive in the presence of the Tarnier instrument.

The straight forceps is worthy of mention only as a matter of history. If forcible rotation of the occiput or face from a posterior position is an allowable operation, it is claimed that we should have an instrument the blades of which could rotate on its own axis.

It is high time to turn a deaf ear to the many names of individuals attached to forceps because of various unimportant modifications of lock, handles, or blades. They obscure the horizon of the subject; they stand in the light and distract attention from the main object, which, like that of the practice of medicine in all its departments, is cure, or life-saving. Two kinds of forceps, two operations, and two distinct fields seem to simplify the situation.

The welding together and unification of the traction-rod and pelvic curve forceps in Tarnier's latest style well-nigh disarms criticism. It is a great achievement, one on which we may congratulate this age. Think of the struggle and pity the sufferings of the man, woman, and child as the operator toils away with the straight forceps at the inlet. The pelvic curve added would only qualify, and not remedy the situation. Still another modification, and science has triumphed. The traction rods, with relative ease and far less force, pilot the head through the upper narrows and thence into the safer region of the low operation.

If we could only persuade operators of the salvation in traction rods at the superior strait; of the pelvic curve under all the conditions of traction; of making traction during the pains rhythmical, direct, slow; of supplementing, not superseding nature; of the prime necessity of utilizing all the *vis a tergo*, and only just enough of his own power to bring the combined forces to the norm, and that all above that should be reckoned as abuse; if we could only get him to be careful, to halt, prospect, and protect the sphincters of the uterus and the vagina, and to beware of rapidly unloading the organ, we would have a reform which would be as life-saving stations all along the passageway.

The function of the forceps known as double leverage, the principle of which is so familiar to the carpenter, is of doubtful value to the obstetrician. Compression is a legitimate function of the forceps only in seizing the presenting part for the promotion of traction.

The chief function of the forceps is traction, and all other uses are subsidiary and relatively unimportant.

Mechanical tractors are objectionable on account of their constant, instead of rhythmical action. They cannot be made subservient to rotation. The dynamometer has thus far failed as a practical aid. Tarnier believes that in the future all objections against mechanical traction will be overcome. Delore gives the opinion that a man, bracing himself, can exert a force estimated at eighty-eight pounds; with support, one hundred and seventy-six pounds.

A case has come under my observation that is unique, in which three physicians, pulling together, exerted their whole power with support. The case was one of contracted pelvis. No. 1 doctor met with difficulty, and called in consultation No. 2; the forceps did

not remedy the situation, and No. 3 was sent for. On his arrival a rope was wrapped tightly around the handles of the forceps, and the patient pinioned around the armpits by two non-professional assistants. The three doctors took position in line, one behind the other, and, supporting themselves, threw their combined weight and strength upon the traction rope. The resistance was overcome, the woman was delivered, and the pelvis was fractured. Both the woman and her child were killed.

Physician No. 3 narrated this case before a medical society to which he belongs not long since, and it stands on record in the minutes of the society meeting as a "most difficult case of labor."

I am fully convinced of the ability of the forceps to help. I protest that they should not be used regardless of the factors of delay. I plead for their judicious use. The indications for forceps use in the first stage of labor are very rare. In certain emergencies delivery by forceps or version is imperative, and we are compelled to operate despite dangers. Among the guides generally laid down is, that the os must be dilated or dilatable. Judgment often goes to protest on this point. The only time to make this test is by touch when the uterus is contracting.

About two years ago I was in attendance upon a most tedious, nervous, and impatient primipara; the os was only three-fourths dilated after a boisterous struggle of two nights and two days. Slowly, almost imperceptibly, the dilatation increased. The patient's qualifications for abuse, however, grew more rapidly, and I came in for a large share of it. She demanded chloroform and instrumental aid, and the husband seconded her claim. The traction-rod forceps were applied, and she was delivered in two hours under chloroform; a febrile trouble and tardy convalescence ensued. Some months afterward she became the patient of a clever gynecologist; his operation told the tale of the "blundering obstetrician." I have never had an opportunity since to call the patient to account.

In this, as in all cases in which artificial dilatation is required, I pursue the following plan: I dilate the os with Molesworth's or Barnes's dilators, so as to get two fingers into the cervix, and then introduce Taylor's narrow-blade forceps. The head is drawn into the os at each pain, to overcome any possible resistance at the internal or external os. This plan will greatly reduce the risks of cervical laceration and limit the force required.

To be thoroughly satisfied of the dilatability of the sphinctoral fibres after the application of the Tarnier forceps, introduce the left hand up to the blades and test the degree of strain on the cervix, while the right hand makes tentative traction.

I cannot forego the opportunity at this juncture to quote Dr. Charpentier, who says, "If nothing urgent calls for the termination of labor, we ought to wait as long as the state of the mother and child will allow. This is an absolute rule, unfortunately for the mother and the fetus, too often infringed. One of the qualities we medical men should possess is the ability to resist the entreaties of friends and the patient, particularly a primipara, to know how *to wait and do nothing.*"

Far the most frequent use of forceps is in the expulsive stage. We are told "any tyro" can perform the operation. Nature generally can do it safer and better, if not so quickly. Time and patience cannot be too much extolled as virtues during the whole of labor. Let the attendant occupy the position of "watchful expectancy."

Remove reflex disturbances, sustain by proper food, guard against fatigue, secure rest, assure and cheer, utilize the simpler methods of assistance, let nature do all she can before we resort to forcible measures. I have had occasion to limit the frequency of my forceps applications lately by the plan of manual pressure. This ancient practice was revived by Ritgen, of Giessen, whose article was entitled "Delivery by Pressure instead of Traction." He answered the question, "Why do we always drag and never push out the fetus?" He said: "Nature exerts her powers by expression," a *vis a tergo*, while that employed in forceps deliveries is a *vis a fronte.*

Kristeller, of Berlin, in 1867, brought before the profession a series of cases in which he used systematic rhythmical pressure on the fundus of the uterus to effect delivery.

He claimed the following advantages: 1st. It shortens the duration of labor. 2d. The normal position of the child is preserved. 3d. The application of the forceps is frequently rendered unnecessary. 4th. It thereby aids in protecting the perineum. 5th. It facilitates and hastens the nevertheless often necessary forceps delivery. 6th. It prevents the upward extension of the arms in breech deliveries. 7th. It hastens the expulsion of the shoulders after the birth of the head.

It has been said the results are more favorable than in forceps cases, that there is less local inflammatory trouble and less septicemia.

These and other manual helps are in accord with nature's methods, and should be utilized to limit the forcible ones.

It has been advised that forceps should be used on the indication "to curtail the pains of labor." This suggestion without qualification leads directly to abuse and danger. Spiegelberg puts the case strongly when he says: "He who undertakes to perform the operation on this ground, must understand how to use his hands intellectually and mechanically." We have most efficient agents for the control of pain in morphia, chloroform, and chloral, hence it is doubtful whether as an isolated indication, pain ever warrants the use of forceps; nor would such cases necessarily end with less suffering after immediate delivery.

It is a common occurrence on the part of women to demand that the accoucheur shall do something to help the physiological processes of childbirth. This question when presented before the British Medical Association had its advocates, but Dr. Robert Barnes spoke of it as an old and bad practice. Spiegelberg emphasizes the dangers of septic results in these as in other excessive manipulations in slow labor.

The demand for instrumental help is made by the suffering woman just as it is for anesthesia for the suspension of pain; not because she in our day differs in a material way from those who lived before these agents were discovered; she is not less heroic and brave now, but she sees no reason why she should suffer in the presence of efficient modes of relief. We must deny, however, that anesthesia stands on the same footing with instrumental delivery. By anesthesia we mitigate pain and other abnormal symptoms and may make the labor more natural. We are justified in the use of forceps, only when Nature is inadequate to accomplish her work.

In cases of excessive nervousness and emotionalism in labor, it is said by high authority that the best treatment is anesthesia followed by the forceps. I would assent in these cases to the anesthetic influence during the pains, because it will generally make the labor more normal. The nervous element, especially in the first stage of labor, is very misleading. It is not always the patient that is most noisy who suffers most, nor is it safe for the accoucheur to be

influenced by her impatient demands for more chloroform or instrumental help.

Inertia, rigid os, tough membranes, cicatricial tissue, obliquities of the uterus—common causes of delay—cannot be treated by forceps without extraordinary risk, especially when occurring in primiparæ.

The loss of time in labor cases should not be accepted as a justification on the part of an accoucheur for resorting to instrumental delivery. We believe, in these times of go-ahead-ativeness, this is a common source of abuse. The forceps is or ought to be a life-saving instrument both for the mother and child, it matters not whether we are dealing with the first or second stage of labor, and we can sum up the indications for their use as being "all conditions in which one or the other is in danger."

Much the largest proportion of forceps applications are in the second stage of labor, and well for the mother and child it is so, since nature has already accomplished most of the work. The danger of traction here is attended with more injury, however, than is admitted or ever known. The whole question of frequent forceps use has been dictated by statistics gathered from lying-in asylums, where the conditions do not furnish a fair comparison with the surroundings of private practice. The patients belong to a different class; they are subject to the will of the operator in a more absolute way. The master of a large lying-in asylum is a specialist, indeed an expert; he has that familiarity with the instrument he is using and that manual skill from the practice and study of the mechanism of labor, which the private practitioner does not have and can never hope to attain. He works on a different plane. Art can and may justifiably be invoked oftener in asylum cases than there is a necessity for in private practice, and even there the mortality from sepsis is more than likely increased by forceps use.

Let this be emphasized: it is not only fetal and maternal mortality that is involved in these artificial deliveries, but the mutilation, the life-long injury, it may be subsequent barrenness!

The rule in Nature's plan is, that she is slow; if precipitate, there is more than ordinary danger. To do in twenty or thirty minutes what Nature would ordinarily accomplish in from four to six hours, is not warranted by pain, emotionalism, or any other indication, unless it be a clear demand to act in view of the jeopardy of mother or child. When we consider the gradual moulding and adaptation

of the presenting part to the peculiar formation of the pelvic canal, and the other active preparations going on during labor for the crowning dilatation, it seems reasonable to stand by Nature and give her time. Do we not underestimate her ingenuity and power?

There is much difficulty in obtaining exact statistics as to the frequency with which the forceps is used. The figures vary with the country and with the operator.

Charpentier gives Ploss's tables for German, Russian, and Swiss maternities, embracing the results in the experience of eighty-three operators. In an aggregate of 333,054 labors the forceps was applied 10,975 times, an average of 1 in 30. The minimum proportion of applications made by any of the operators was 1 in 291 labors, by Osiander, of Göttingen, and the maximum 1 in 3 labors by Hohl, of Halle.

Ploss's tables for the application of forceps in England, give for the operator who makes the least exhibit, 1 in 3,878 labors. The operator with the greatest relative number shows a proportion of 1 in 7.8.

Jacquemier's tables for Madam Boivin show 20,517 labors and 96 forcep cases, or 1 in 214. Madam La Chapelle, 22,517 labors and 26 forcep cases, or 1 in 827. Clarke, of Dublin, 10,199 labors and 14 applications, or 1 in 728. Ramsbotham, 26,676 labors and 34 applications, or 1 in 785. Siebold (Berlin), 2,093 labors and 300 applications, or 1 in 7.

These statistics embrace a period from 1792 to 1862. Those were the days of the swaddling infancy of obstetric knowledge, when method was just inaugurated by Baudelocque. During most of the time involved even the pelvic curve was unknown.

Still they are useful in the light of history, in setting forth the wide range of opinion as to the frequent use of the forceps in those days. They seem to point, then as now, to "rash officiousness on the one side" and "irresolute passiveness" on the other. They are conclusive, that the latter partisans prevailed, that the forceps was used far less frequently in those days than in these.

Galabin says, some authorities in urging the frequent use of the forceps have based their recommendation upon the very large saving of fetal life said to be attained thereby. He says it does not appear that there are any trustworthy statistics, proving that any such large saving can be attained. He compares the statistics

of two lying-in charities, Guy's and St. Thomas's Hospitals. For twelve years (1863 to 1875), in Guy's the forceps rate was 1 in 200 deliveries, the stillbirths 2.7 per cent. In St. Thomas's, in 1874, the forceps rate was 1 in 18, stillbirths 2.8 per cent. In 1875 the forceps rate was 1 in 16, stillbirths 2.8 per cent. In the above ratios of stillbirths premature and macerated children are included. It, therefore, appears that no one would probably now recommend for private practice so sparingly a use of forceps as only 1 case in 200, yet with this a slightly better ratio of stillbirths was attained than in St. Thomas's with a use of forceps ten or twelve times as frequent. Not a single mother died after forceps in these years at St. Thomas's Charity. Galabin gives the forceps rate at Rotunda Hospital from 1847 to 1875 as 16.5 per 1,000, and the maternal mortality as 13 to 1,000. From 1871 to 1875, forceps rate as 96.4 per 1,000 and mortality 22 per 1,000. The latter high mortality was mainly due, he says, to puerperal septicemia, and cannot fairly be taken as telling conclusively against the frequent use of forceps.

In St. Thomas's Charity in 1874 with a forceps rate of 54.2 per 1,000 the mortality was 7.4 per 1,000; in 1875 with forceps rate 61.8 per 1,000 the mortality was 3.4 per 1,000 giving a mean mortality for the two years of 5.4 per 1,000. He concludes that no positive general rules can be laid down as to the frequency with which it is desirable to use forceps, but that the statistics of the St. Thomas's Charity appear to show that a forceps rate of 1 in 16 or 1 in 18 deliveries does not endanger the mothers, though wider statistics on this point are desired.

The injuries to the mother and to the child consequent upon the use of the forceps are manifest, though they are minimized by the expertness of the operator.

It must be insisted, however, that the experts in the use of forceps are as rare as those in the use of the knife.

It is to be deprecated that there is not a greater tendency to specialism in obstetrics. No man ignorant of the mechanism of labor and of the classical rules for using the forceps should ever undertake a high operation. That clumsy, untutored, and unskilled hands do harm with forceps, even at the lower strait, cannot be denied. As long as this want of training and fitness for obstetric operations exists, it will be humane to withhold our advocacy of a still more frequent use of forceps. We will ever be averse to sub-

stituting art for nature as long as man is inferior to his Maker, except we act because of the jeopardy of mother or child. What is beyond this is foreign to the purpose of cure. I am sometimes reminded, when I see Nature ignored, of the impudent egotist who said, if he had been present at the creation of the universe, he could have made to the Creator some very valuable suggestions.

There are many accidents and injuries which may befall the mother and child at the hands of the forceps. They range from the simplest to the gravest physical injuries. To these a dreary list of secondary troubles may be added, embracing mental alienations, unfruitfulness, and marital infelicity.

I desist from enumeration, as I have already extended this paper beyond what I intended at the onset, and, further, because I feel certain you have been impressed by the literature of the subject, as contained in the many admirable works on gynecology.

It may be argued that I should have chosen the popular theme of "forceps use", and said something to inspire a higher qualification for the more frequent use of forceps. It is not best always for all to agree. Let us hope that out of our honest differences truth and cure may come.

My personal experience in private practice has been, until recently, on the side of frequent applications. It shows an average in the last ten years of 1 in 10.5 labors. From the inauguration of the Maryland Maternity Hospital in 1874, to 1888 inclusive, there have been 1,495 deliveries. We applied the forceps in 142 cases, or 9.4 per cent. Only two deaths ever followed forceps use, and one of those died from septicemia. Twelve cases of sepsis, however, followed forceps applications. In six of these cases the forceps was the starting-point of an outbreak of sepsis in the hospital.

The forceps has been applied but twice in the last one hundred cases in the above-named institution. No case of sepsis has occurred, and but one death. This was one of the two fatal cases after forceps I have referred to, and in which death was caused by traumatic peritonitis.

The number of forceps applications reported by the Philadelphia Maternity Hospital, in 1886, was 1 in 8.

The average at the Columbia Hospital, Washington, D. C., for a number of years past has not exceeded 1 in 20 labors. I am sure

I have used forceps too often. I know of some harm I have done, though I am confident I have done much good with them.

I believe, in the absence of reliable statistics, 1 in 15 to 1 in 20 labors is about as often as forceps need be used, though I know a number of obstetricians who exceed my rate. I am informed that in the Vienna Lying-in Asylum the ratio of applications to deliveries in the past year was only 2 per cent.

I will feel repaid for my effort in writing this article if I can succeed in drawing out such a discussion and comparison of experience as will give more light on this question; if only some one hearer will be inspired to gather up recent and reliable statistics not only from asylums, but, what is far better, an aggregate of the experiences of private practitioners.

I am strongly convinced that the pendulum, having left the position of infrequency, is swinging too far in the other direction.

The obstetrician would do well to be found in the good company of the physician in the prevention of disease—the surgeon in his conservatism and in line with the modern sanitarian.

DISCUSSION.

Dr. Townsend, of Albany.—With reference to the paper as read by Dr. Opie, especially with reference to the different stages of labor. The first stage is governed by the sympathetic system, and the second stage by the cerebro-spinal. We are afraid in the second stage that, if the cerebro-spinal system be too much taxed, it will injure our patient seriously. It seems to me that labor in the second stage should never be allowed to linger longer than four hours; that when it does, the exhaustion to the cerebro-spinal system is such as to warrant a speedy termination of labor.

Dr. A. P. Clarke, of Cambridge, Mass.—I have listened with much interest to the reading of Dr. Opie's paper. The frequent use of forceps began before the mischief from the many lesions incident to the application of this instrument was fully recognized by gynecologists. With the more conservative part of the profession, the use of the forceps is becoming more and more to be restricted to the occurrence of those cases in which, as Dr. Churchill once remarked, "the

obstacle cannot be overcome by the natural powers with safety to the mother and child."

In the first series of a thousand obstetric cases occurring in my own practice, the long forceps was used thirty-seven times, being once in about every twenty-seven cases. In a later series of cases, the per cent. was once in every forty cases. Greater experience, care, and attention rendered the use of forceps less necessary. In those cases in which either the long forceps or version had to be resorted to, there was a small per cent. in favor of the forceps. I regret Dr. Opie had not elaborated this point more particularly, as it is one of very great importance.

As regards choice of instruments, I like Hegar's modification of Simpson's instrument. This instrument is not so bulky as Tarnier's. It does not occupy as much space in the vagina, and there is more room for the hand and fingers during the application and extraction.

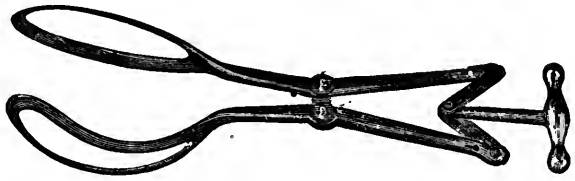
Dr. William S. Stewart, of Philadelphia.—I am very much pleased with the paper of Dr. Opie. I think all teachers should be exceedingly careful in recommending the use of obstetrical forceps. In the first stage of labor I should say, as he has, they should never be used if we wish to preserve a good healthy condition of the cervix.

As the tendency of the times, especially in large cities, is to hasten delivery, and the practitioner is often importuned by the patient to imitate those who boast of skill in that direction, the temptation to frequent examination and to forcing labor is strong; therefore, instead of remaining in the house, I think it wise for him to watch the case closely by calling in as seems indicated; such has been my custom, and a reasonable degree of success has followed.

In the second stage of labor, however, I believe we can be guided in the use of forceps by the labor itself, by action and reaction. Should the condition exist in which the head becomes absolutely locked, there being no progress either during the pains or the rebound, action and reaction not present, then in careful hands there seems to me nothing better can be done than to use proper instruments, as otherwise rupture and injury from pressure are more likely to occur than from the use of instruments.

In a large obstetrical practice I have used instruments frequently, but have had more satisfaction in the use of these which I desire to exhibit to-day than from any others now in use. I was led to devise this instrument because of several times experiencing inconvenience in the progress of labor; the situation was the head in the second position, the vertex to the right, and locked firmly in the pelvis. I was unable to apply the second blade; to overcome this it was necessary

to use the second blade first, and take the risk of injuring the child while recrossing the handles. With these forceps having parallel instead of cross handles this danger is obviated, as it does not matter which blade is used first. In these the irregularity of compression is



also overcome; by the traction applied to this double joint is produced compression equal to resistence, and no more. The compression is regulated to a certain degree, too, for it cannot go beyond the same line of compression of the ordinary forceps when the handles are close together. I have had these instruments in use for more than a year, in about twenty cases, sometimes when the resistance was so great that severe injury seemed unavoidable, but no ill effect being produced, I can confidently recommend their use, feeling sure that the advantages named will be evident to all who will give them a trial where the use of forceps is indicated.

Dr. Joseph Price, of Philadelphia.—For years I condemned the use of forceps in unqualified language. A short time after graduation I took charge of a large obstetrical institution and soon singled out three hundred patients on which to study this point; in twenty-five of these cases forceps had been used in previous labors, and in none of the twenty-five could I find a single indication for their use. I know that in skilled hands it is a very valuable instrument. While I am a convert to Baudelocque's dictum that "The forceps have been more injurious to society than useful"—I do find occasionally the fullest and clearest indications for their use. I am glad the author has advocated the Tarnier traction forceps, and has called attention to the Taylor narrow-blade forceps. In one case—a very ugly patient—evisceration had been performed in five successive labors; she finally agreed to submit to induced labor, and thereafter was delivered three times of living children with the traction-rod and Sims' forceps. The Sims' forceps have an advantage in their greater diameter; are not so much of a compressor. I have gone to three series of one hundred cases without taking my forceps out of the bag. We may attribute this very common use, and most culpable abuse to a degree of convenience sought after, which would not be tolerated in the practice of any other

branch of the profession, assurance given that instant relief would occur and prolonged suffering be prevented; such instances are commonly enough practised for the convenience of the physician and with absolute indifference as to the result to the patient. We may charitably attribute the result to ignorance in the greater number of cases, but want of honest purpose in the attending physician in the remainder. In a discussion on the use and abuse of the forceps in our Obstetrical Society, one man admitted that he could not afford to attend poor women for five or ten dollars and not use forceps. It was five or six months before he came back to the Society, so thoroughly was he rebuked. No man has a right to terminate a natural labor by forceps to gain time for himself, to demonstrate their use to others, or to familiarize himself in the application of this potent instrument—otherwise he is guilty of a criminal assault. I have had some recent experience with the use of ergot. I was called to a mountainous district in our State to do some plastic operations. I thought I knew something about laceration of the cervix and perineum, but after quite an experience I became satisfied that those I had been dealing with were of little importance compared with what I had to deal with here. I at once asked the physicians if ergot was not commonly used here. They replied that it began there with the premonitory symptoms of labor.

Dr. Opie.—The effect of adopting the suggestion of Dr. Townsend, to limit all cases of labor protracted beyond four hours, by a resort to forceps, would be to increase greatly the frequency of their use, and their abuse. The length of time alone, however protracted, is never a justification for using the forceps. We have unmistakable indications and symptoms of approaching exhaustion, whether it occurs sooner or later than the four hours' limit. Many women occupy more than this amount of time in the second stage, without a single untoward symptom. This is especially true of the primipara. In this class, much time is spent in overcoming the resistances of the soft parts. In confronting the dangers of traumatism of the soft parts at the outlet of the parturient canal, we may, as a rule, consider time a crowning virtue. Occasionally, a large, firmly ossified head is tightly wedged in the pelvis, and touch discloses one or more dangerous points of pressure; here we have a warrant for expediting the case, should unusual delay occur, but we can nearly always wait without bad results to mother or child where the head is on the cushion of the soft parts, and nature is pursuing slowly the even tenor of her way in overcoming the stubborn resistances.

Dr. Clarke touches a point of warning which had best be heeded by the extremists in the frequency of forceps use, and by the novice, when

he says: "Greater experience, care, and attention rendered the use of the forceps [in his hands] less necessary."

As regards the relative positions of forceps and version, my views have been changed since the introduction of traction-rod forceps. I believe, as skill in the high-forceps operation becomes more general, delivery by version will more and more rarely be resorted to.

Dr. Stewart has my thanks for his timely reminder, addressed to the skilful operator, of the danger of "forcing labor." The forceps invented by Dr. Stewart, like the classic forceps, has been limited to the field of the low operation by the invention of traction-rod attachments.

I am convinced of the correctness of Dr. Price in imputing most of the abuses in forceps applications to ignorance and a want of honest purpose in operators. I have been a witness more than once of cases which were comparable with "a criminal assault." I am not willing withal to agree with Baudelocque, that "forceps have been more injurious to society than useful." It was doubtless true before he gave the medical world his admirable classification of the pelvic positions, and presentations of the child. The skill and conscientiousness of many operators now-a-days, and the curtailment of the use of destroying and mutilating instruments, must be credited on the side of the forceps. My views on the subject of ergot coincide with Dr. Price's. It is simply amazing that such horrors as grow out of the abuse of the forceps and ergot should continue, despite the accumulation of facts and warnings.

A CONTRIBUTION TO THE STUDY OF THE REFLEX NEUROSES OF PREGNANCY, WITH A CASE OF APHASIA GRAVIDITATIS.

By G. A. MOSES, M.D.,
ST. LOUIS.

The organs of generation may be considered the centre of gravity around which woman's physiological system revolves. Intimately associated by its ganglionic nervous connections with every other system, it controls or modifies every function upon which the healthy performance of life depends, and in many instances even slight lesions or departures from normality produce protean symptoms which render existence torture.

And thus, while in a perfect condition of health, pregnancy and its consequent evolution of the uterine contents should be, and is, a purely physiological process. We know how very frequently it assumes pathological features of the gravest import, a large proportion of which are represented by either direct nervous phenomena or affections of remote organs which can only be explained by what has been termed, and very aptly, reflex processes, as chorea, hemiplegia, mania, monomanias, hysteria, etc., and under certain unexplained conditions the child has even presented more or less the mental or nervous condition of the mother during such pregnancy. Waldenburg reports, as is quoted by Kussmaul (Ziemssen, vol. xiv. p. 802), a case in which, at the third month, the woman was attacked with aphasia and right hemiplegia, the child being aphasic.

Case I.—Mrs. A. H., aged thirty-eight, a healthy woman of good physique, blonde, family history good, parents French. Has had twelve children, one miscarriage about four years ago, caused apparently by excesssive fatigue. Labors have been natural. Never has been attended since the first by other than a midwife. Menstruation normal, except since miscarriage it was at times hemorrhagic. When, as she supposed herself, pregnant about three weeks she found on awakening in the morning that she spoke with difficulty, stammering and hesitating for the proper word, so that it was difficult

to express her wishes or give directions to servants or children. During the day the symptoms gradually increased. She slept well, and found on the second day further difficulty, so that she secluded herself, being ashamed to converse even with members of the household. She visited me on the third day, anxious and distressed. While perfectly conscious of the word she wished to use, she constantly used an incorrect one, or, recognizing the difficulty, would make unavailing efforts and finally cease the attempt; able, however, to repeat the word after one. No paralysis was evident in any way. Her general health seemed as usual. Appetite and digestion undisturbed; bowels regular. Renal secretions normal. Heart's action healthy. No pain. No disturbance of vision.

Taking everything into consideration my diagnosis was that the condition was a reflex neurosis, and assured her of an early improvement: advised exercise in the open air, abstention from house duties; nutritious food; wine, which she usually drank at meals, and a mixture containing the bromides of sodium, ammonium, and potassium. At the expiration of a week the trouble began to subside, and in three weeks it was only slightly apparent; but during the entire pregnancy, which terminated in a perfectly natural labor, there was more or less aphasia, which entirely disappeared within a week after confinement.

CASE II.—Mrs. B., a stout, healthy woman of about thirty-five, multipara. I was called to see her on account of a violent hemorrhage consequent upon an abortion in the third month; found retained placenta decomposing. After removal of the uterine contents and a thorough cleansing, convalescence was prompt, and I lost sight of her. This patient gives a history of several abortions which she attributed to the effort of coughing.

The first symptom she always had of pregnancy was a cough which persisted throughout the early months of pregnancy. I have misplaced my notes of this case and report it from memory. She had borne several children in the first years of marriage; the youngest was about six years of age; with these the cough was slight and the duration not prolonged, but in other instances the cough was almost incessant, incorrigible, and finally resulted, as in this instance, in, as she expressed it, "coughing the fetus out." As soon as abortion was completed, the cough disappeared, and careful examination revealed neither pulmonary nor laryngeal cause—in fact, she appeared to be in all respects, except the uterus, healthy. I had no opportunity of examining the pelvic condition after convalescence, as she left the city.

In this instance the cough seemed to replace the ordinary nausea, which never coexisted with the cough.

CASE III.—Mrs. J., aged thirty-two, has had three children; first labor tedious, terminated by forceps, others natural; a highly nervous tempera-

ment. When about the close of the fourth month of the fourth pregnancy, during which nausea had been very severe, she complained of severe hypogastric pain and gastrodynia, vomiting everything. Becoming excessively nervous, hysterical, sleepless, and at times giving way to violent fits of uncontrollable temper, her attendant had felt compelled to administer, as the only mode of obtaining quiet, morphia and chloral freely.

I saw her in consultation, when she had arrived at a condition of mania. She was five months advanced. Negative signs led me to think that the fetus was dead, and whether it were or not, I advised the induction of premature delivery, which advice was concurred in; but within twelve hours after the decision, labor pains set in spontaneously, resulting in the expulsion of a dead fetus, with a softened placenta, evidencing a placentitis; metritis existed, accompanied by continual pain and fever. Mania continued, and three months elapsed before she recovered. She soon became again pregnant, miscarrying at the third month. The placenta and secundines were removed with some difficulty, the uterus thoroughly cleansed, and recovery from this resulted in a better condition. Uterine health was perfectly reëstablished, so that when, in the course of a year, she became once more pregnant, gestation was normal; but little nausea; an unusually good lying-in and perfect health following.

These three cases I have selected from many others as indicating, I think, the fact that all abnormal pregnancies exhibiting grave reflex phenomena are due distinctly to lesions more or less gross and discernible, affecting the generative system, or of prëexisting abnormal condition of remote organs, predisposing to reflex irritation; and, therefore, if recognized promising successful treatment, that may and should avert recurrence of such dangers.

In each case the patient was multiparous, and presented no history of previous pelvic disease.

The neurotic disturbances commenced at a very early period of pregnancy, nor were they accompanied by any abnormal displacement.

In a valuable paper read at the last meeting of the American Medical Association,[1] Dr. Jaggard, of Chicago, sustained the theory that incorrigible nausea and vomiting of pregnancy were often due to endometritis. I not only endorse his position, but advance it, hoping so far to meet the approval of the profession as to incite to further observation and discussion of the matter, so that the truth or error of the suggestion may be established.

In the nutritive and developmental changes that are incited by

[1] May, 1888.

the condition of pregnancy, commencing with the fertilization of the ovum, the ganglionic nervous system is predominantly active, the centre of action is undoubtedly localized in the abundant nerve centres about the field of active changes; and from these centres are propagated nerve influences which reach through the vasomotor system to every other ganglion, and, if there be any particularly sensitive centre, however remote, it is that which is most apt—almost certain—to exhibit the effect of irritation. That such propagation of irritation is possible has been demonstrated by studies relating especially to chorea, which as von Ziemssen says, while they arise in those who are commonly predisposed to the disease, require the processes in the uterus for their development, and quickly cease after delivery and relief of uterine irritation.

Elischer reports a case (Ziemssen, vol. xiv. pp. 450, 451) of a woman who had chorea in her first pregnancy from the sixth month until delivery; and again, in the second pregnancy, followed by miscarriage of a dead fetus, endometritis, and death. The autopsy revealing extensive disease, especially of the large central ganglia of the brain, the reporter was undecided as to how much the disease could be referred to the puerperal condition.

I have reported, as have others, cases of eclampsia occurring without marked changes in the urine until after convulsions had continued, and even then no sign of renal disease excepting a temporary albuminuria, rapidly disappearing after delivery. In such instances I can only refer the effect to nutritive changes produced by the irritation of the vasomotor system, resulting in localized hyperemia; such are the cases so promptly relieved by free venesection and relief of arterial tension, which otherwise result in nephritis, or cerebral lesion and death. I consider the common symptoms, nausea, etc., of the pregnant woman, due to the propagated irritation of the solar plexus, that "cerebrum abdominale" of the older authorities.

The uterine lesion that exaggerates this nervous influence may be inflammatory, or, as is sustained by some excellent authorities, mechanical. That the causes are various is proven by the varieties of treatment that are at times successful, but if the lesion is intra-uterine, as endometritis, or fetal, all measures fail of relief until one of two results occur. The most fortunate is what I take to be a condition of tolerance, of which we have analogies in other instances,

in which the nerve centre seems either to become, to an extent, habituated to a slight abnormal irritation, and so ceases to resent the inciting cause; or premature expulsion of the uterine contents only affords relief, which is, of course, less fortunate. Where the lesion is cervical, local measures will frequently succeed in giving relief. Where the cause is tension upon the ligaments, or pressure in the early stages upon the pelvic viscera, the elevation of the dependent organ gives the needed rest and cure; but unless relief is thus achieved, the perpetual nerve irritation continuing, the result will be the continuation of effect, and either through the dilating nerves we have active hyperemia and increased tension, with its consequences, or contracting fibres being those in predominant action, the result is venous stasis, or passive congestion, either cause effecting serious nutritive and metamorphic disturbances, which occasion symptoms according to the organs resenting the disturbance; altered secretion, as in the stomach and intestines, being the most common, the kidneys, heart, or the central nervous system next usually suffering in the order named.

It has not been my purpose to cite bibliography on this subject nor to attempt a finished argument. As I have advanced in the contemplation of the matter, I find so extended a field of study that I offer this merely as an introduction to further observation, the results of which I purpose presenting at our next meeting.

INTRAPERITONEAL HEMATOCELE.

By J. H. SCARFF, M.D.,
BALTIMORE.

Nov. 12, 1887. Miss H., aged twenty-five, saleswoman, presented herself at my office with a letter from her physician, stating that the bearer was suffering from a tumor of the pelvis, probably an osteo-sarcoma. From her I obtained the following history: One year ago, while waiting on a customer, a box of goods slipped from her grasp in removing it from an upper shelf, striking her upon the left side of the abdomen. She remained at the store during the day, but was compelled to remain at home the next and several days thereafter under the care of her physician. About two weeks after her return to the store, and while performing her usual duties, she was suddenly seized with a severe pain in the left inguinal region, and in a few moments fell in a faint upon the floor. She was removed to the dining-room attached to the store, and there remained for several hours, in a condition of collapse, before being able to be removed to her home. She remained at home under the care of her physician until she was referred to me.

A physical examination revealed a tumor in the left side of the pelvis, extending well down to the floor, upward on a line with the superior spinous process, and about one inch beyond the median line. The uterus was pushed to the right side and forward, of normal size, but anteflexed. The growth was immovable, and seemed to be firmly attached to the pelvic walls. No fluctuations detected per vaginam, and only apparently so above the pubis. Surface of the tumor hard and somewhat irregular. Physical condition moderately good.

A positive diagnosis was not made, but I was firmly convinced I had to deal with a pelvic inflammatory deposit and subsequent intraperitoneal hemorrhage. She was advised to return home, dispense with all tight clothing, keep as much as possible in a recumbent position, use good nutritious food, and that I would visit her in a few days to make a further examination.

This visit was intentionally postponed for several weeks. The tumor had gradually increased in size, while the patient remained, physically, the same.

Feb. 23, 1888. I made a second examination under the influence of an anesthetic administered by her family physician. The tumor had increased

in size, its upper border reaching nearly to the umbilicus, and, per vaginam, hard and nodular as before, with no fluctuating points. Over the abdomen fluctuation was distinct.

An aspirator needle was inserted, and a syringeful of disintegrated blood was withdrawn. Having no evidence that pregnancy had ever existed, the normal size of the uterus, sudden illness and collapse a few weeks after injury, continued hardness of the tumor per vaginam, independence of the tumor and uterus, rapid development of the tumor, regularity of outline, and uniformity with which it filled the abdominal cavity, fully confirmed my opinion of the existence of an intraperitoneal hematocele. There can be no doubt that an inflammation, with subsequent exudation, resulted from the injury produced by the fall of the box, and sufficient pressure was placed upon an already diseased vessel to cause its rupture. From this standpoint we can readily explain the uniform hardness and irregular surface of the tumor when felt per vaginam; also the fact that when the patient was placed in the knee-chest position the tumor did not recede from its position in the pelvis. After this examination a change was wrought in the patient's physical condition. The tumor rapidly increased in size, and symptoms of purulent infection presented. While every precaution was taken in the use of the aspirator to prevent infection, by the use of antiseptics, yet the cause and effect were too closely connected not to think suppuration was in consequence of this means of diagnosis. Severe pain over abdomen, recurring rigors, rise of temperature, profuse sweats, and pinched facial expression bore witness that septic absorption was going on. Opiates when needed for pain; quinia and antifebrin to lower temperature, with stimulants and good diet were given for about three weeks, when the abdomen became so thoroughly distended that, to avert a fatal rupture of the pus sac, I was compelled to aspirate. Five pints of pus mixed with disintegrated blood were withdrawn, and the cavity injected with a solution of iodoform and Price's glycerine, ʒij ad. ℥ij. A marked change took place in the symptoms and condition of the patient, temperature fell to 99°, pulse 85 to 90, rigors ceased, suppression of sweats, etc. This improvement was only transitory, for soon there was a return of all the symptoms manifested after the use of the aspirator. The abdomen rapidly filled again, and I now felt it my imperative duty, as the patient was rapidly losing ground, to open the abdominal cavity and rid it of suppurating clots, and débris.

Aug. 6. She was removed to a private room in the female department of the Maryland General Hospital.

8*th.* After all antiseptic precautions needed had been made, in the presence of the hospital staff I proceeded to open the abdomen. An incision four inches long was made in the abdominal walls down to the peritoneum. This was hooked up by a strong tenaculum, while a large trocar was passed into the sac; the patient was turned upon the side, trocar withdrawn from canula, and contents allowed to flow out until all tension had been removed from the sac walls. The canula was now withdrawn, the peritoneal opening enlarged to correspond with the incision in the abdominal wall, and the sac completely emptied of all fluid contents. Passing my left hand into the sac

I removed a large basinful of altered and suppurating clots. The cavity was thoroughly bathed with hot water, and upon inspection we found that the uterus and appendages had been completely shut off from the pus cavity, as well as the abdominal viscera above. Four ounces of glycerite of iodoform, ʒj ad. ℥j, were instilled into the cavity and a drainage-tube inserted. The peritoneal surfaces were brought together by uninterrupted catgut, and the abdominal surfaces by interrupted silk sutures. There is nothing worthy of note in the subsequent treatment, as the patient made a speedy recovery, left the hospital for her home at the end of the third week, and has since rapidly gained in flesh and strength.

In conclusion this case can be briefly epitomized as follows:

1. Pelvic inflammation and exudation from injury, simulating true pelvic tumor.

2. Rupture of bloodvessel in peritoneal cavity at time of sudden illness and collapse at store, and formation of an intraperitoneal hematocele.

3. The rapid suppuration of blood-clot through infection by aspirator needle.

4. The extent of the provisional sac for the retention of pus in the peritoneal cavity.

5. Rapid recovery after abdominal section.

AN UNUSUAL CASE OF SUBSEROUS UTERINE FIBROID.

By HAMPTON EUGENE HILL, M.D.,
SACO, MAINE.

I was called, December 22, 1887, to see Miss A. H., American, aged forty years. She was much emaciated, the abdomen was very large, the lower ribs pressed outward, abdominal wall edematous, as worn, also, the lower extremities. The menstrual periods were irregular and scanty. She had, apparently, a very large tumor in the abdomen for so small a woman. Upon examination of the abdomen it had a firm, peculiar feeling, somewhat modified by the edematous condition of the abdominal wall. The uterus was somewhat crowded down in the pelvis, and but slightly larger than normal. The depth of the uterine cavity was two and three-quarters inches. It was slightly movable. To the left of the uterus projected a somewhat soft, elastic mass, feeling like a cyst. On the right of the uterus, and above, there was, apparently, a firmer mass. The general impression gained by the examination led me to diagnosticate the tumor as an ovarian fibro-cyst, to all appearances like one that I had removed a few months before. Miss H. was failing in health and strength. The tumor was first noticed six years before I saw her. She had been under treatment, in one way and another at different times, with no particular benefit. For a few months previous to my seeing her the tumor had made a somewhat rapid growth, her general condition growing rapidly worse, indicating that the end was not very far distant. Miss H. and her family wished to have the growth removed, if it could be done. I told them that the operation would at best be a severe one in her condition, but if left to grow she could not expect to live many months at the rate it was then growing. I told them that I would make the operation and do the best that I could if the patient was willing to have the operation made; fully examining her condition, and her chances of recovery, as against her chances of life if it was not removed. After some further explanations in regard to her case, I left her and her family to make their own decision about an operation. A few days after they sent for me again, and told me that they had thought her condition over carefully, that she felt that she could live but a short time without an operation, and that she and her family had decided to have it done, with a hope of recovery as against a short life in her present condition of suffering. She had been told in previous years that she could not

survive an operation. I confess to feeling at that time that the chances were much against her recovery, and if I could have known that the growth was a solid uterine fibroid, as I afterward found it to be, I think I should not have undertaken the operation in her feeble condition.

I made such preparatory arrangements as I considered necessary, and setting the time for the operation on Tuesday of the next week, I returned home. As my patient was in New Hampshire, and some distance from my home, I returned on Monday and finished all preparations for the operation.

I made the operation at 10 A.M. on Tuesday, January 3, 1888, with the assistance of Drs. J. E. L. Kimball and F. E. Maxcey, of Saco, Maine, and M. C. Lathrop, of Dover, N. H. A short time before administering ether, I gave my patient an ounce of brandy, which served the purpose as a needed stimulant. I had taken every aseptic and antiseptic precaution that I could think of in relation to the room, the patient, the clothing, myself, my assistants, all instruments, and everything in anyway connected with the operation. Upon making the abdominal incision the tissues were found very vascular. When the surface of the tumor was reached, it was discovered to be firmly adherent to the abdominal wall, and the adhesions were a complete network of bloodvessels. I soon found that the tumor was a solid fibroid, and, after a moment of consideration, concluded that the only reasonable way was to finish the operation. The hemorrhage was something unusual. I had but twelve pairs of hemostatic forceps, which were very soon all in use, and then the only thing to be done was to secure all vessels as fast as they were divided, as the patient was not in a condition to survive a great loss of blood. I was obliged to tie a great many vessels, and many arteries were stopped by torsion. Over the larger part of the anterior surface of the tumor the adhesions were thoroughly supplied with bloodvessels, but toward the sides the adhesions were nearly free from bleeding vessels. The omentum was adherent over most of the upper part of the tumor, and was very vascular. By the time that the abdominal wall was freed from the tumor the patient began to show signs of collapse. The lower extremities were raised, the head lowered, and brandy administered freely under the skin. During the dissection of the adhesions I had carried the abdominal section from the pubes close to the ensiform cartilage. The tumor had crowded the liver and diaphragm very high. After the parietal adhesions were clear, I carried my hand up over the top of the tumor, and behind it, and felt a broad, flat band of adhesion connecting the tumor with the mesentery. In this band I could feel pulsating vessels. This band afterward proved to be a mass of vessels (mostly veins) covered by peritoneum. As there was not room enough in which to get any control over the hemorrhage, the woman being already in a very feeble condition, I did not attempt to tear this mass of vessels through. I then carried my hand under the lower part of the tumor, which projected considerably over the pubes, and found a pedicle connecting the growth with the fundus of the uterus, about the size of the fundus itself. With some difficulty I managed to carry an écraseur chain between two fingers under the growth, and with two fingers of my

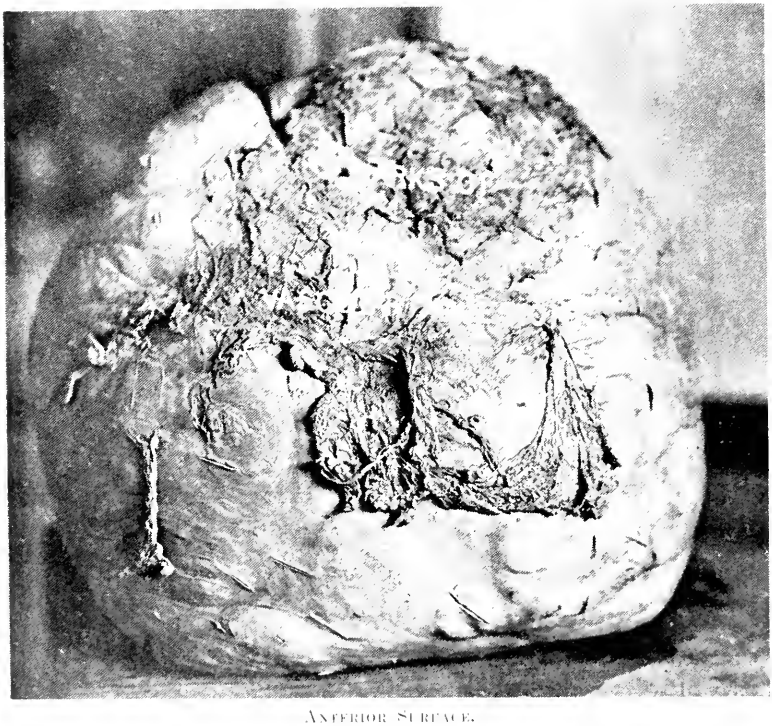
right hand got the end of the chain around the pedicle and withdrew it. I constricted the pedicle with the écraseur until it gave a somewhat firm feeling, sufficient to stop the circulation. I then carried the fingers of my left hand behind the pedicle to keep back the intestines, and, with a pair of long scissors, carefully cut the tumor away from the pedicle by sense of touch, for it was entirely out of sight. After dividing the pedicle I, with some difficulty, raised the lower end of the tumor partially outward and downward. This left sufficient room above the upper end of the growth to carry a long clamp forceps behind it, and compress the most of the mass of vessels running into it from the mesentery. I then divided the tumor from this as I did from the pedicle. Then I was able to deliver it from the abdomen, and ligate the mesenteric mass in three parts. By this time there was little or no bleeding at any point, but the patient was collapsed and pulseless at the wrist. The intestines, which lay very flat about the spine, I covered with hot sponges and water; the brandy injections were repeated by Dr. Lathrop, the ether suspended, the head lowered, and the hips and lower limbs raised, while I proceeded as fast as possible to transfix and ligate with strong silk the pedicle, and remove the écraseur. I then found a cystic tumor of the left ovary, about the size of an orange, which I ligated and cut off. This cyst of the ovary was one of the causes of my mistaken diagnosis, in connection with the small and somewhat movable uterus, edematous abdominal wall, and large size of the tumor. I cleansed the abdomen as rapidly as I could found no sign of any hemorrhage, and quickly closed the abdominal wound (which was a large one), using silk sutures, thirty-three in all. In the lower end of the wound I placed a curved glass drainage-tube, reaching to the bottom of Douglas's cul-de-sac. I used many ligatures in the abdominal cavity, all of them silk. A dressing of bichloride of mercury gauze and cotton was applied, and the patient put in blankets in a bed which had been previously heated, and small stone jugs containing hot water, with the stoppers well tied in, were placed around her, under the blanket, and so as not to get near enough to burn. The operation had lasted, from the time of commencing the ether until she was put in bed, two hours.

When the patient was put in bed no pulse could be felt at the wrist, and respiration was very feeble. I injected some warm water and brandy by the rectum after she was put in bed, and, later, warm beef-tea. The hemorrhage had been considerable, in spite of all the care I could take during the operation, and this, with the shock, for a time seemed likely to prove fatal. I got everything ready for the venous injection of a saline solution, in case there was no improvement in her condition, and there should be evident further failure; but, after a time, I was greatly relieved to find the pulse, respiration, and general condition improving, which, of course, contraindicated the saline solution. Hardly any ether was used during the last half hour of the operation.

The tumor weighed forty-seven pounds; it measured in length sixteen inches, in width fifteen inches, in thickness ten and a half inches.[1] The

[1] See Plate.

Posterior Surface.



Anterior Surface.

Weight 47 pounds. 16 inches long; 15 inches wide; 10½ inches thick.

patient is four feet and eleven inches tall. I do not know how much she weighed before the operation, but, with the exception of the edema of the lower limbs, she was very thin and anemic.

On the day of the operation, at 6 P.M., the pulse was 92, the temperature 99.4°. Reaction was quite complete. At 9.30 P.M., pulse 96, temperature 99.2°. During the second day the highest pulse was 100, temperature 99.6°; lowest pulse 94, temperature 98.6°. Third day, highest pulse at 9 P.M., 96, temperature 98.2°; lowest pulse at 7 A.M., 84, temperature 98.2°. Fourth day, highest pulse at 2 P.M., 92, temperature 99.8°; lowest pulse at 1 A.M., 88, temperature 98°. Fifth day, highest pulse at 9 P.M., 96, temperature 99.6°; lowest pulse at 7 A.M., 80, temperature, 98.2°. Sixth day, highest pulse at 7 P.M., 104, temperature 100.2°; lowest pulse at 3 A.M., 90, temperature 99°.

For five days after the operation the drainage was very free, necessitating a frequent change of the dressing. After five days the drainage-tube had become closed in by lymph, and the drainage ceased entirely. The upper part of the body had been kept somewhat raised, so that all fluid would run into the cul-de-sac, which it will not do when the body is in a horizontal position. I removed the tube on the sixth day.

On the seventh day, the highest pulse was at 1 A.M., 112, temperature 100.6°; lowest pulse at 6 A.M., 106, temperature 99.6°.

At this time the abdominal wall had become thickened and hard, as if there was a dinner plate underneath it, and there was some evidence of accumulation of fluid in the abdomen. The patient had taken liquid nourishment well from the first day, also beef-tea injections for the first few days. The bowels were moved the third day by citrate of magnesia solution, and afterward by injection, when the accumulated gas became troublesome.

Ninth day, the highest pulse was at 3 P.M., 120, temperature 102°; lowest pulse at 1 A.M., 104, temperature 99.4°. Tenth day, highest pulse at 3 P.M., 120, temperature 102.6°; lowest pulse at 8 A.M., 120, temperature 100.8°. Eleventh day, highest pulse at 7 P.M., 120, temperature 108°; lowest pulse at 8 A.M., 110, temperature 101°. Twelfth day, began the use of eight-grain doses of acetanilide about three times in twenty-four hours; highest pulse at 5 P.M., 110, temperature 101.5°; lowest pulse at 7 A.M., 100, temperature 99.8°. Thirteenth day, highest pulse at 4 P.M., 112, temperature 101.2°; lowest pulse at 1 P.M, 104, temperature 100.2°. Fourteenth day, highest pulse at 9 P.M., 106, temperature 100.6°; lowest pulse at 9 A.M., 100, temperature 99.6°. Fifteenth day, highest pulse at 4 P.M, 106, temperature 100.4°; lowest pulse at 3 P.M., 96, temperature 99.8°. Sixteenth day, the highest pulse at 4 P.M., 108, temperature 100.6°; lowest pulse at 1 A.M., 96, temperature 99.6°. Seventeenth day, the highest pulse was at 4 P.M., 106, temperature 101.4°; lowest pulse at 1 A.M., 100, temperature 100°. By the eighteenth day there was a considerable accumulation of fluid in the abdomen, which seemed to be burdensome and retard recovery. The hardness of the abdominal wall had mostly disappeared. I turned the patient on her side and, with a small trocar attached to an aspirator, drew off forty ounces of rather thick straw-colored serum, in which were two fine silk ligatures from the abdominal

wall. After this the patient improved steadily, and at the end of three weeks I left her, but visited her a few times after until she was able to get about. The patient is at present in good health and quite heavy in flesh.

I have reported this case more fully, perhaps, than necessary, but it may be of service to some one else as inexperienced in such cases as myself, who may make a mistake in his diagnosis, and get just such a surprise as I did.

I spent three weeks with this patient away from home, and did nothing else but take care of her with the nurse. During the first nine days I did not leave the house, but attended to every detail of care and diet myself by day and night.

TREATMENT OF CERTAIN CASES OF SALPINGITIS.

By AUGUSTUS P. CLARKE, M.D.,
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Within the last decade the researches made in the domain of gynecology have been unprecedented. Instruments almost without number have been devised. The ora and cervix uteri have been most thoroughly explored, every degree of flexure and version has been carefully noted, and treatment from time to time, often the most diverse, has been employed to overcome and to change the relation of certain phenomenal appearances. The achievements of the ovariotomist have been most brilliant, and have demonstrated that the peritoneum is no longer to be regarded the *terra incognita*, but with proper precautions and with strict antiseptic measures it may be invaded, and the uterus or its adnexa be safely removed when the operation is not complicated by individual and accidental circumstances. The successful results of such operations have tended to embolden operators to make further advances in this new field, and by close observation and by careful analysis the fact has been developed that the textures of the ovaries and of the Fallopian tubes are subject to functional and organic derangements which often necessitate surgical interference, as do other tissues and structures of the human organism. Battey's operation, or, as it has been sometimes called, "normal ovariotomy," was first reported[1] about sixteen years ago. This was undertaken for the purpose of preventing ovulation, and of hastening the menopause, particularly in instances in which the ovary was viciously or abnormally performing its functions. This operation, when first reported, though deemed an innovation, soon gained a

[1] Atlanta Medical and Surgical Journal, 1873.

place in the practice of gynecic surgery, and, though it may have fallen short of accomplishing what the most enthusiastic advocates had hoped, yet the skill and technique developed in its performance were not permitted to slumber, but opened the way for other advances in that direction. Tait's operation for the removal of the uterine appendages has gained substantial footing, and the question must soon come home to every thoughtful and fair-minded operator: What is to be the outcome of so much "unsexing"? The removal of the uterine appendages has been advised chiefly in cases of chronic ovaritis, in which ovulation and menstruation continue even after the ovary has reached an advanced state of disorganization. The persistence of the functional process intensifies the inflammation, compromises the integrity of the ovary, and thus hastens the disorganizing process.

Inflammation of the Fallopian tubes has a tendency to invade the ovaries, and to lead to their ultimate destruction. The fact that pathogenic organisms of gonorrhea can invade the tubes and adjacent peritoneum has now become quite well established, has modified the treatment heretofore employed, and has encouraged adoption of the measures of surgical interference. The development of this practice arose from the theory that when once the gonorrheal infection has passed beyond the uterus the disease is incurable, and can be minimized or relieved only by ablation of the tubes, ovaries, or other tissues involved. The cervical lacerations which have been regarded as the cause of nearly all the lesions and inflammatory diseases of the uterus and its appendages—the surgical operations deemed vitally important, and involving as great amount of skill in their performance as was ever exercised in operative cases heretofore—have begun to be questioned. Quite recently some of the most important canons upon which the principles of gynecology have rested have been attacked by Dr. Emil Noeggerath,[1] who regards such cervical tears as having no special influence on the production, intensity, or frequency of uterine lesions. In cases of disease of the uterus, according to his view, conception takes place more readily

[1] Boston Medical and Surgical Journal, vol. cxix. p. 94.

when the cervix is lacerated than when it is intact. Neither is the position of the uterus influenced nor its axis lengthened by laceration of the cervix. Late utterances ascribe gonorrheal infection as the prime factor in the causation of inflammatory processes of the uterus and its adnexa, either immediately or at some remote interval preceding their occurrence. Without attempting to enter upon the discussion as to the extent and frequency of such sequelæ, all must admit that when salpingitis or pelvic inflammations arise from the presence of gonorrheal sepsis the expectant plan of treatment should find no place, and our only hope of success lies in adopting the most prompt and energetic treatment afforded by the healing art. In the treatment of vulvo-vaginal gonorrhea I use the sublimate solution, 1 : 1000, which I carefully apply to all the folds and rugæ of the parts. This I repeat every day. I paint the os and cervix with tincture of iodine. If there are indications that the uterine canal is involved, I apply the strong tincture of iodine by means of the uterine applicator. When called to cases in which the gonococci have gone beyond the uterus I have succeeded, in several instances, in passing the uterine sound and probe into the Fallopian tubes, using the tincture of iodine as an application to these parts. Sometimes the tubes are closed and sealed against the passage of a probe, but by patience, perseverance, and by thorough dilatation of the cervix, much can be accomplished that will lead to successful results. Closure of the Fallopian tubes from various forms of inflammatory action has long been recognized. Thus, Jones and Sieveking make mention of catarrh and exudative inflammation, not unfrequently causing a temporary or permanent closure of their channels. These observers, also, state that the morbid contents of these tubes are sometimes poured into the uterus, probably in consequence of the occlusion only having been effected by inspissated mucus. A less favorable result is when rupture and effusion of the contents pass into the abdominal cavity. In an occurrence of this latter event, I have found the aspirator of great aid in conducting the case toward a favorable issue. A much weaker solution of bichloride will often prove sufficient—say one to two thousand, or one to five thousand. Much depends upon the persistence in its

use. A weaker solution, when followed up, will often accomplish more than a stronger one occasionally employed. For the removal of the consequent exudation and hyperplasia of the uterine appendages from whatever cause proceeding, nothing has given me so great satisfaction as the application of electricity. For several years it has been my practice, in cases of the various forms of salpingitis, to attempt local treatment, and in several instances I have succeeded in passing a probe or catheter into the Fallopian tube when diseased. I find, however, that this method of treatment is not wholly new with me, for in a paper contributed to the Section of Gynecology of the Ninth International Medical Congress by Dr. Thomas More Madden, of Dublin, entitled "On the Treatment of Sterility in Women," a somewhat similar mode of treatment is described. Dr. More Madden, speaking of serous and purulent exudations, says: "In many cases of the latter there is, as I can vouch from clinical experience, no impossibility of reaching and removing the collection, whether a hydro- or a pyosalpinx, by aspiration, or, in some instances, by catheterization of the diseased Fallopian tubes." The same eminent author says that he invariably endeavors to impress, by clinical demonstration on those who attend his hospital practice, the too generally ignored fact, that the catheterization of the Fallopian tubes, when employed by a practised hand, and with due caution, is a feasible one, and, in some instances, may prove an effectual method of treating certain cases of dysmenorrhea and sterility otherwise incurable. The use of electricity is an important adjunct in overcoming the pain, in removing the exudation, and in restoring the normal functions of the parts. The galvanic current should often be chosen on account of its catalytic action, but the faradic current and the metallic brush are valuable counter-irritants, for, besides lessening the pain they promote absorption of the tubular exudation and diminish the morbid processes in the vicinity of the ovaries. In the application of the metallic brush as a counter-irritant the change or influence induced in the vessels and absorbents must contribute largely in the curative process accomplished by electricity. In cases in which an electrode can be passed into the Fallopian tube the current may be passed direct; a rheostat in the cur-

rent is sometimes advisable. The following cases are annexed to show the more beneficial results of treatment.

CASE I.—Mrs. L., thirty-eight years of age, had suffered for the past three years from ovarian pain, which had followed the birth of her only child. She had been under the treatment of two physicians, who had resorted to the use of three different kinds of pessaries for the relief of a retroversion which was supposed to be the cause of her suffering. She experienced but little relief from the treatment employed. At the time I was called, which was December 10, 1887, there was quite severe pain in the region of the right ovary; she was married; her menses appeared about every twenty-two days, each menstruation lasted upward of five days, and during the time caused her much suffering. Vaginal examination, four days after recovery from a menstruation, revealed the existence of a severe cervicitis, though there was no laceration either in the cervix or in the perineum. There was a little muco-purulent discharge discovered in the vagina, but on closer inspection it became evident that this discharge had escaped from the cervical canal. The depth of the uterine canal was nearly three inches; there was tenderness on either side of the cervix, and in the vicinity of Douglas's cul-de-sac. Insertion of a sound caused unusual suffering. Microscopic examination of the pus removed from the interior of the uterine canal revealed the presence of the gonococci. The vulvo-vaginal mucous membrane was thoroughly irrigated with a sublimate solution, 1 : 1000. Iodoform gauze and absorbent cotton were freely used as tampons. These applications were renewed at intervals of one to two days. Applications of tincture of iodine to the cervix and to the uterine canal were also made. The ovaries and tubes were evidently involved in the inflammatory process. A mild faradic current was employed, an intrauterine electrode was connected with the negative pole, while the positive was applied to the ovaries. The metallic brush was also used. The sittings at first were quite short, but were repeated at frequent intervals. After the lapse of ten days, I succeeded in passing a uterine probe and also a uterine sound into the left Fallopian tube. At length I also succeeded in catheterizing the right Fallopian tube. This was soon followed by great relief from all the severe symptoms. On February 1st, the patient was able to come to my office for treatment. A hot solution of carbolic acid, 1 to 40, was used to disinfect the vulvo-vaginal introitus. Faradism and local treatment were continued at intervals of two to three days, until March 10th, when the patient had so far recovered that regular continuance of treatment appeared unnecessary. Since then the patient has regained her strength and weight, and experiences now no inconvenience from any local trouble.

Speaking in reference to the practice of catheterization of the Fallopian tubes, it is not here claimed that we can always succeed in accomplishing this; but when it can be done, there is no more impropriety than in attempting a similar treatment

on the Eustachian tubes, lachrymal ducts, and in other natural channels subject to occlusions from various diseases incident to them.

CASE II.—Mrs. P., twenty-nine years of age, married, mother of two children, the younger of whom was two years old, began to suffer more or less from ovarian pain about one year after the birth of her second child. She had had a copious vaginal discharge, which was ushered in with chills and febrile reaction; had received no special treatment until I was called, February 1, 1886. At that time the pain and tenderness in region of the ovaries were very troublesome. I ordered at first vaginal douches of boracic acid and hot water, four grammes to sixteen c. c. of water. Vaginal examination revealed the existence of a multiple laceration of the cervix, which was markedly swollen, red, and irritated. There was an intrauterine discharge of a purulent character. At that time no gonococci could be found. The hot douches were continued twice daily, and tincture of iodine to the uterine canal was applied by means of the uterine applicator. The cervix was dilated and the canal was curetted. Fomentations were employed over the ovaries on the outside. After the third week of treatment I attempted catheterization of the Fallopian tubes, but not until after three unsuccessful trials at different times did I succeed in passing a medium-sized uterine sound. I finally succeeded in catheterizing both tubes. The operation was repeated a few times at intervals of a week. In the meantime the faradic current was employed daily, the negative pole was connected with an intra-uterine electrode, as in the other case, while the positive was applied over the abdomen and on either side in the vicinity of the ovaries. Subsequent examination of the intra-uterine discharge showed the presence of the gonococci. The patient gradually improved; and by April 1st was free from pain and tenderness, and felt quite well; all abnormal discharge had ceased, and the cervical laceration gave her no inconvenience. Within the past four months the patient has given birth to a healthy child, and is in fairly good health.

CASE III.—Mrs. H., aged thirty-nine years, married, and mother of three children, the oldest of whom was twenty years of age and the youngest ten. For the past three years immediately preceding my visits, the patient was regarded as a confirmed invalid. The winter before she came under my treatment she had been sent to Jacksonville, Florida, with the hope that a change of climate and care would improve her health. After a stay of three months she returned, though very little improved. When I was called to attend her, April 27, 1884, she was confined to her bed, and was suffering intensely from pain, particularly in the right ovary. I found by vaginal examination that there were three cicatrices, evidently the result of old cervical laceration. There was profuse discharge from the uterine canal. Hot carbolic acid douches were made. The uterine canal measured three inches, and was unusually sensitive. The os and cervix were daily painted with the tincture of iodine, and applications of the same were made within the

uterine canal. After the third week of treatment the patient had improved, but the pain and tenderness in the ovaries still persisted. Catheterization of the Fallopian tubes was attempted, and at length I succeeded in introducing a bougie, and also a uterine probe, into the right Fallopian tube. This operation I repeated, and, afterward I ventured to make an application of iodine with a long uterine probe. The faradic current was also employed; the positive pole was connected with the uterine electrode, and the metallic brush connected with the negative was applied over the abdomen in the region of the ovaries. These applications were made at first at intervals of every day and every other day, and, later on, every three to four days, until August 23d, when the patient had nearly recovered. The patient gradually gained in strength and weight, and was able to go out and take exercise and long drives without becoming fatigued. Evidence was obtained that this trouble had a gonorrheal origin. The disease evidently had passed beyond the uterus and into the Fallopian tubes, causing her this long and severe suffering.

CASE IV.—Mrs. C., aged thirty-four years, married, mother of one child six years old, had suffered more or less from pain, dull aching, and tenderness in the iliac region of both sides, for two years preceding my attendance. There was a history of vaginal discharge and slow recovery from her confinement. She miscarried during the third month of pregnancy, three years after the confinement. I was first called June 5, 1887, four days after the cessation of a menstruation. Her menstrual periods, though painful, were quite regular, occurring every month. The uterine canal measured two and a half inches. There was a minor degree of anteversion, but the patient experienced no vesical disturbance. On the right side of the cervix there was a linear cicatrix, evidence of an old cervical tear, but this apparently gave very little inconvenience. The chief trouble was centred in the region of the ovaries. A semi-gelatinous exudation flowed from the uterine canal, but no gonococci could be found, and no evidence of any specific disease could be obtained. The hot vaginal douche and iodine tincture were freely had recourse to. Catheterization of the Fallopian tubes was attempted, but at first was not accomplished. The application of the faradic current always gave relief. The intra-uterine electrode was connected with the negative pole, and the positive electrode was applied direct over the abdominal parietes, particularly in the iliac region on each side over the uterine appendages. This treatment was persevered in at intervals of every two, sometimes of three days, until July 15th following, when I succeeded in passing a sound into the left Fallopian tube. This was effected by drawing the cervix downward by means of the vulsellum forceps, then by gentle manipulation a soft bougie, and afterward a sound, readily entered the tube; after a few days the other side was catheterized, and this appeared to afford marked benefit. The improvement continued, and by September 1st the patient was free from pain and tenderness, and considered herself as cured.

In reviewing the history of these cases it appears that the chief obstacle to the recovery of each patient was owing to

inflammation which had passed beyond the uterus, and had centred itself in the appendages, and, more especially, in the Fallopian tubes. In three of the cases the cause of the morbid processes was owing to the presence of gonorrheal virus. In the fourth case the tubes must have been occluded by inspissated mucus. After repeated attempts catheterization in each case was accomplished, and found to be highly beneficial in overcoming the occlusion, as well as in effecting dilatation and drainage of the tubes.

Faradization appeared to be also of great importance in controlling the pain, in lessening the irritation and hyperemia, and in promoting absorption of the morbid deposits in the overburdened tissues and organs in the vicinity of the tubes. It is now quite well established that the application of the faradic current, as well as the passage of galvanism, can be made capable of yielding most excellent results, not only in effecting the absorption of the morbid deposits occurring about swollen or inflamed joints and other structures affected by disease in general, but also in hastening the contraction of the superficial bloodvessels and the removal of morbid fluids and other products and growths connected with the genitalia. In connection with these cases I might report that I have notes of nine other cases of chronic and subacute ovaritis and salpingitis, in which the application of the faradic current proved beneficial. Two of these cases were known to be of gonorrheal origin; in three cases that disease was suspected; in the other four, however, the microscopic examination, as well as all the circumstances connected with them, precluded the possibility of such an infection. In the treatment of the above cases no attempt, of course, was made to measure the dose of electricity administered, as the form of electricity was chiefly that of the faradic current. I have instituted, however, a series of observations on certain uterine and pelvic growths with the employment of the galvanic current, the dose of electricity measured in milliampères; for the present I am not ready to report the results. The report of the treatment of the above-mentioned cases is here presented, not as a substitute for the operation for the removal of the uterine appendages in particular cases of ovaritis and pyosalpinx. This operation in the

cases for which it was originally designed is one of great usefulness. I present these cases rather in hope that the adoption of the present means at our command, persistently and perseveringly applied, may help to prove that the operation for the entire removal of the uterine appendages is not so often demanded for a cure as has been heretofore considered.

THE INFLUENCE OF THE SEXUAL LIFE OF WOMAN IN THE ETIOLOGY OF CERTAIN DISEASES OF THE EAR.

By THOMAS E. McARDLE, M.D.,
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It has been very well said that it is extremely rare to find a normal, symmetrical general system in connection with defective reproductive organs. Hence the difficulty of stating, with any degree of assurance, how far the sexual organs act in the causation of departures from the norm in organs more or less remote from the pelvic viscera. Diseases of the uterus and its appendages have been announced as the cause of reflex symptoms in and about various organs of the body. As far as I have been able to learn, however, from a close study of the little literature I could find on the subject, Baratoux,[1] in 1879, was the first to write of the relationship between diseases of the ear and those of the uterus. He was closely followed, in the same vein, during the next year by Lichtenberg,[2] who discussed the question of the influence of woman's sexual life upon aural disease. Whilst these two have described so well in French and German the many cases coming either under their own observation or within their knowledge, yet I think neither describes a simple neurotic disturbance, such as I assume my own cases to be; a purely reflex neurosis without a discoverable pathological alteration of structure that could be taken into consideration as a factor of etiology.

That diseases of the ear can be influenced by the healthy or diseased sexual organs of woman I think both Baratoux and Lichten-

[1] Des affectiones auriculaires et de leur rapport avec celles de l'uterus. J. Baratoux: La Tribune Médicale, xii. et seq. 1879.

[2] K. Lichtenberg: Pest. Med.-Chir. Presse, xvi. 1880. Des Einfluss des weiblichen Geschlectslebens auf die Entwickelung der Ohrenkrankheiten des Weibes.

berg have proven, and undoubtedly will the existence and variety of these disturbances be confirmed by observant otologists and gynecologists. At present, however, the labors of these two pioneers seem to have met with no encouragement or even recognition from clinical investigators of the one or other specialty.

Baratoux, in many pages of *La Tribune Médicale*, has given carefully studied histories of twenty-five cases. In seven separate chapters he speaks of

Ear troubles at puberty.

Ear troubles at each menstrual epoch.

Ear troubles at puberty and at each menstrual epoch.

Ear troubles at the menopause.

Ear troubles following pregnancy.

Ear troubles following menstrual disorders.

Ear troubles causing menstrual disorders.

It may be interesting to give the salient points of one case under each heading.

I. Mlle. L. was of a strumous diathesis. At ten years of age she suffered from typhoid fever, which was followed by a purulent middle otitis, the discharge continuing for several months. Slight deafness was the result. At thirteen, she menstruated for the first time. Immediately a slight purulent discharge from the ear reappeared, accompanied by very loud noises and increased deafness. The symptoms grew better after the disappearance of the menses.

Two similar cases are reported in full.

II. Mme. K. L., twenty-eight years old, of a lymphatic temperament, enjoyed good health until her thirteenth year, when the menses appeared for the first time. Some months afterward she felt a slight pain in the right ear, which soon became severe enough to keep her awake at night. This happened some days before her menstrual period. From that time on her symptoms were as follows: Six or seven days before the menstrual flow, she experienced lancinating pains in the right ear. These disappeared at the end of the third day, and were followed by a slight but very fetid purulent discharge, which persisted for three or four days, when the menstrual flow began, preceded by one day of abdominal pain. During her three pregnancies she never menstruated, but the ear symptoms appeared with the same regularity. Since her last confinement her menses have been irregular, and so have the aural phenomena.

Seven similar cases are described.

III. Mlle. X. had suffered from a purulent affection of both ears, a sequela of scarlet fever. At sixteen, the menses appeared. Her linen was

but slightly stained, whilst a copious hemorrhage flowed from both ears for four days, diminishing little by little; red, pink, and yellow, in successive gradations, until finally it became as purulent and fetid as before. This anomaly occurred at each succeeding period. Both tympana were perforated, and both drums were filled with fungous granulations, which bled at the slightest touch. The blood could be seen flowing from each ear at every period. General treatment was given, and the granulations of the left ear were cauterized. At the end of a month these were destroyed, and at the next menstrual epoch bleeding occurred from the right ear only. This period having passed, the right drum was cauterized, and cured in two months. At the next catamenial period blood flowed in abundance from the uterus, and each succeeding month the discharge was normal.

One other case is given.

IV. Mme. Y. was fat, large, and plethoric. Her habits were sedentary. Her menses were profuse, but irregular. During an interval of four months she felt pains in the ear, together with sensations of shaking and displacement in the side of the head and in the ear, and itching at the bottom of the auditory meatus. Moving and stooping increased these disturbances. Shrill, irritating noises in the ear drowned her own voice and increased her deafness. Voice sounds seemed to come from afar, whilst watch sounds were feeble. At the end of the fifth month the menses reappeared, the flow was abundant, and the amelioration of the head and ear symptoms were rapid, if not complete.

Two cases somewhat similar are described.

V. Baratoux gives an excellent description of five cases which, in his opinion, go to prove that pregnancy aggravates ear troubles. But I presume that no one doubts that such is the case. I examined a young woman some three years ago who had given birth to three children. After every confinement her power of hearing was lessened. She had never suffered from otitis, nor was there ever any discharge from either ear. A careful examination disclosed no lesion of any part of the auditory apparatus. The patient has given birth to another child since that time, and her friends tell me she is deafer than ever. Lichtenberg has a theory on this subject, to which I will refer later on.

VI. Mlle. K., twenty-six years old, was tall and strong, and menstruated freely. A sudden suppression of the menses from cold caused deafness, which increased little by little. She had never had any discharge from the ears. Another sudden suppression was followed by worse effects in the ear.

Histories of four other cases are mentioned.

VII. Mme. A., a widow, twenty-eight years old, was pale and anemic. At the age of five a polypus was discovered on the left drum. It had been removed four times. When it was again removed for the fifth time,

a severe hemorrhage took place from the ear and simultaneously from the vagina. The ear was cauterized twice a week, and each time there was hemorrhage from the vagina. Two months of treatment resulted in the cure of the polypus, and the cessation of the uterine hemorrhage. Menstruation became normal, and a leucorrhea, from which she had formerly suffered, ceased from that time.

Lichtenberg noticed that at puberty a previous otorrhea which had been cured again got worse. The tinnitus, deafness, and otorrhea were all increased. Moreover, the other ear, which had been previously healthy, also suffered from congestion.

In all of Lichtenberg's cases there had been aural trouble in earlier life, which, though subsequently considered cured by physicians and patients, burst into active disturbance at puberty. Tinnitus, deafness, and otorrhea are the evidences that the organ does not normally functionate. That an altered nutrition is not absent is affirmed by Lichteuberg when he says he has, in treating disease of one ear, found at this time the other previously entirely healthy ear also congested.

Aural disturbances, periodically occurring with menstruation, is the second class of cases mentioned by Lichtenberg. He dwells upon them especially as subjective symptoms. They usually commence a few days before the flow begins and gradually or suddenly cease with the uterine bleeding. Sometimes one, more frequently several evidences of ear disease were present. Pain was usually the last symptom to disappear.

Lichtenberg holds it probable that the association of deafness (labyrinthitis albuminuria) with pregnancy may be accounted for by the presence of albuminuria, and says that the aural disturbances may disappear with the disappearance of the albuminuria or become permanent with the disease of the kidney. Such a relationship, however, has not yet been proven.

There were no symptoms in my own patient, spoken of above, prominent enough to direct my attention to her kidneys. If it be possible I shall endeavor to have such an examination made. Unfortunately, she has passed under the care of another who has promised to cure her.

Lichtenberg also mentions the fact of a vicarious menstruation from the ear in place of the discharge of an existing otorrhea.

My own cases of disturbances in and about the ear, due to the

influence of woman's sexual life, are four in number. One was associated with the menopause and one with pregnancy. Of these I do not purpose speaking in detail, but I shall briefly narrate the histories of two cases of pain and other symptoms in and about the ear associated with disturbances of the catamenia.

CASE I.—Miss A. came under my care suffering, as she supposed, from an affection of the right ear. Whilst there was no constancy in the pain, yet there was a severity at times which compelled her to seek her bed. I examined both ears very carefully and thoroughly without finding sufficient cause for so much disturbance. Upon examining the throat and nose I found a subacute pharyngeal catarrh, together with some congestion of the right Eustachian meatus. I thought the case similar to that of many others I had seen with like symptoms, and proceeded to treat it accordingly. Several months of constant treatment of the ear resulted in but little benefit to my patient. I noticed that at each catamenial period there was an exacerbation of the pain in and about the ear. This began twenty-four hours before the menstrual flow. The patient was twenty-three years old, and I had watched her grow from childhood to womanhood. Barring an attack of typhoid fever some years ago, I had never known her to have a serious illness. Indeed, I had often admired the plumpness of her form and the elasticity of her step, indicative, I thought, of perfect health. I have never discovered the slightest indication of hysteria in herself or in any other member of her family. She slept well, her appetite was excellent, and her bowels were in fairly good condition. Close questioning revealed the fact that she had been a martyr to dysmenorrhea from the first appearance of the menses, at the age of fourteen, until the present time. I told her mother that I was quite confident some relationship existed between the ear symptoms and some uterine disturbance, and that the removal of the latter would relieve the former. She and her daughter were at first loath to have any local treatment of the womb tried, but finally consented after another month of futile efforts in the way of pharyngeal medication.

A vaginal examination disclosed some tenderness in the region of the right ovary and stenosis of the cervical canal. In addition to the other measures, I proceeded to treat my patient with applications of electricity, and by that means succeeded in dilating the cervical canal. She did not improve at once, but my persistent efforts were finally rewarded. Cervical dilatation was followed by improvement in the ear symptoms. Freedom from dysmenorrhea meant freedom from pain in and about the ear.

Just here I must remark, however, that I am disappointed in the use of electricity as a permanent dilator in the treatment of stenosis of the cervix or stricture of the urethra. I am free to confess that the fault may be in the operator and not in the agent.

CASE II.—Miss B. came under my care during the period I was treating the patient whose history I have just given. She, too, suffered from distressing symptoms in and about the right ear. She was twenty-four years old and a teacher of music. The pains in her head rendered her duties particularly irksome. A careful examination revealed no disease of either ear, but there was present a subacute pharyngeal catarrh. After some time spent in futile efforts to relieve her, I made inquiries with regard to her menstrual life. I was not much surprised to learn that she frequently missed her menses for months at a time. He uterus was as small as that of a child at puberty; there was a glairy cervical catarrh, and the whole vaginal tract was exquisitely tender. She was a decided contrast to my first patient both in spirits and physique. Her general health was poor. She suffered dreadfully from constipation, and frequently voided her urine but once in twenty-four hours. She had no appetite and slept badly. It would not surprise one to find such a patient hysterical. In addition to making every effort to improve her general health, I treated her diseased pelvic organs with electricity. Some benefit resulted from my efforts, and I believe if she had been as persistent as my first patient she would have been cured. At any rate, I can safely say that treatment of the uterus was more beneficial in relieving the ear spmptoms than medication applied to the pharynx and Eustachian tube.

Both of my cases, it will be observed, had only subjective symptoms, the principal of which was pain in and about the ear. The pain was so severe as to render irksome the duties of one as a teacher, and to send the other to bed with a hot-water bottle to the right side of the face. The associated pelvic tenderness was also on the right side. In both cases amelioration of the pelvic symptoms afforded relief to the head disturbances.

It must be borne in mind that at no time during the lifetime of my patients had there ever been otorrhea, and the pain and noises came on only after puberty.

I think it can safely be said, with Lichtenberg, that on the basis of these empirical facts we have the right to assume that the uterus, in its normal functions as well as in its pathological variations, can produce complications in the organs of hearing. But, in order that these can occur, it is necessary that they find a favorable soil; in other words, that they appear in such individuals as have been previously affected with ear diseases, or in those who are under the influence of a deleterious quality of the blood.

DESMOID (FIBROID) TUMOR OF THE ABDOMINAL WALLS.

By EDWARD J. ILL, M.D.,
NEWARK, N. J.

The conclusion of the medical man naturally follows his experience. Let me, therefore, relate two cases of desmoid tumors which have occurred in my practice within the past year, and then I will ask your indulgence as to what my experience and reading have taught me.

Case I.—Mrs. L. T., American, aged twenty-three, married four and a half years, mother of two children, last child three weeks ago, was brought to my notice on February 12, 1887, through the kindness of Dr. Brumley, of Newark, N. J. The history, as was kindly given by the doctor, was this: For some time during the earlier part of the patient's pregnancy, she noticed a swelling situated in the upper portion of the left lumbar and umbilical regions. No special notice was taken of it, however, although there was a pricking pain occasionally experienced. The doctor discovered it during the confinement of the patient. While the child was still in utero it was taken for a uterine myoma. When the child was expelled, however, it was noticed that the tumor still remained in its former position.

The patient was a woman of small stature, pale, nervous, and slender build. On uncovering the patient's abdomen a hard, very smooth, laterally, and, within a certain limit, freely movable tumor was noticed about ten centimetres in length by seven centimetres in width, reaching from the lower border of the ribs in the left hypochondrium downward into the left lumbar and umbilical region, remaining about two centimetres from the median line. It was prominent above the surface of the abdominal walls surrounding the tumor, and seemed to dip into the abdominal cavity about as far as it was above the abdominal walls. It was moderately tender to the touch, there was dulness all over it, and tympanitic resonance around its border. The spleen was made out easily by percussion, in its proper place, as was also the liver, both being separated readily from the tumor by an intestinal resonance. There was no difference in the percussion sounds over the region of the kidneys, from which it was inferred that those organs were in their proper place. The spleen and liver dulness were normal. During

PLATE I.

a. Skin.
b. Superficial fascia.
c. Abdominal muscles.
d. Fascia tranversalis.
x. Subperitoneal cellular tissne.
e. Peritoneum.
f. Tumor.
g. Median line.
h. Anterior sheath of the rectus.

deep inspiration and expiration it remained stationary, or, rather, there was a forward and backward movement.

The fundus uteri, which was felt just above the pubes, had no connection with the tumor, nor was there any evidence of the tumor having any connection with the pelvic organs generally.

After finding this condition of things, I felt very certain that I had to deal with a desmoid (possibly sarcoma) of the abdominal walls, and recommended its removal. At this time the patient objected to any interference, and pressure was not brought to bear upon her, since a prolonged observation was deemed advisable to satisfy any doubt as to the diagnosis. On October 12, 1887, was the next date when the patient was seen by me. This was eight months after I had first seen her. Her general health seemed as good, if not better, than it was on February 12th, though the woman nursed her baby during this time. The tumor had grown almost double in size, and was situated in the same position. It had grown more laterally than downward, so that it reached the median line, and extended to near the quadratus lumborum; below, it was near the crest of the ilium, gave the patient great uneasiness, simply from its pressure, and some dull, aching pain. She was now willing to have it removed, but wanted to have it seen by some prominent surgeon for his unbiassed opinion. Her doctor selected a most distinguished and prominent gynecologist in New York to see her, and it was in his office where I saw her for the second time on the date above stated.

The doctor rather nonplussed us (Dr. Brumley and myself) by calling it an enlarged spleen, and, when that was shown to be an impossibility, a displaced and enlarged kidney. This diagnosis was also objected to, and an exploratory abdominal section was advised as the only means for getting at a correct view of the case. The doctor did not commit himself to any positive diagnosis, saying that desmoids of the abdominal walls were too rare to make a positive diagnosis. As will be seen further on, this doubt of so prominent and so highly esteemed a surgeon rather changed my plan of operation, and possibly made it more complicated.

The patient was admitted into my service of the Woman's Hospital of this city on November 1st, for operation.

The usual treatment as to diet, bowels, and baths, such as we are accustomed to use in this institution in all cases where the peritoneal cavity is opened, was given. The plan of the operation was clearly laid out and followed in all its details, as the gentlemen present at the operation can testify.

In the main, I followed the method of Dr. M. Sänger, of Leipzig, to whose excellent article in the *Archiv für Gynäkologie*, Band 24, Erstes Heft, I am highly indebted, and will frequently make reference to in the detailed history of my case and *rêsumé*.

Operation November 5, 1887. The patient was anesthetized. I was ably assisted by Dr. Balleray, Dr. Bennett, and the house staff; Dr. Brumley and many of the gentlemen of the staff of St. Michael's Hospital being present.

After proper antiseptic preparation of the abdomen, dry carbolized towels

were laid all over the patient except the field of operation. Since such a strong doubt as to the diagnosis was expressed by our New York consultant, I first made an exploratory incision to the right of the tumor in the median line, about five centimetres in length. When the incision had been carried into the peritoneal cavity there was no longer room for a doubt in the diagnosis. The tumor could be taken between the fingers in the peritoneal cavity and the hand outside, and the posterior surface of the tumor was seen to be covered with peritoneum. It now also appeared that the tumor dipped into the abdominal cavity as deep as it arose above the abdominal walls. A transverse section of the tumor and relative position of its covering and surroundings would appear as shown in Plate I. (which I would say is a modified drawing from Sänger's article). (I should say that the subperitoneal cellular tissue should have been drawn much thinner.)

A transverse section of the skin was now made, reaching from the middle of the exploratory incision to nearly the outer edge of the tumor in the lumbar region. The upper portion of the flap was now dissected backward far enough to allow the finger and the needle carrying the suture to enter between the costal cartilages and the tumor. Two ligatures were thus carried, one near the tumor and the other near the costal cartilage, and the tissue intervening cut. It now became impossible to continue the ligatures on account of the proximity of the tumor to the cartilages.

The lower portion of the tumor was now attacked, and double ligatures were carried, one near the tumor, the other about two centimetres from the first, and the tissue between was cut. The ligatures were carried about two centimetres apart, with a strong needle fastened to a handle similar to a perineum needle, except that its edges were dull. The succeeding ligature always caught up some tissue of the foregoing, so that there was complete prevention of hemorrhage. As soon as the opening was large enough to admit the introduction of a flat sponge, this was done, and all fluid, blood, etc., kept from entering the cavity of the abdomen.

While separating the skin and superficial fascia from the tumor there was a great loss of blood from the tumor side, and nothing but a sponge or the fingers pressed firmly on the tumor prevented bleeding. The openings made by a needle, to stop the flow by ligature, even proved a source of annoyance and worry. Thus it occurred that the skin was dissected off by successive steps only so far as was necessary to get at the edge of the tumor. Fifty-six ligatures were thus inserted, twenty-eight on the tumor side and a like number on the distal side. The portions ligatured near the crest of the ilium and the costal cartilages proved to be the most troublesome, and in the latter place it occurred that a ligature slipped and hemorrhage took place from a very large artery, which I took to be the internal mammary or one of its branches. All these ligatures were made of strong silk. The visceral organs which appeared in the wound were the left portion of the greater curvature of the stomach, a portion of the left lobe of the liver, the transverse and beginning of the descending colon, omentum, and small intestine. We now had a large opening in the abdominal wall about twelve by fourteen centimetres in size, and nothing to cover it except skin and

PLATE II.

Fig. 1.

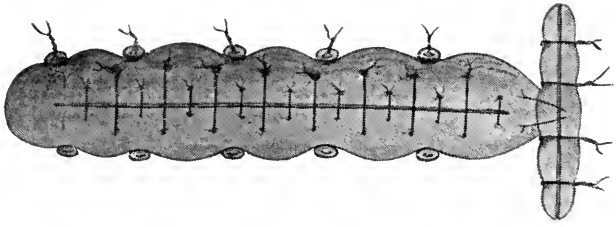
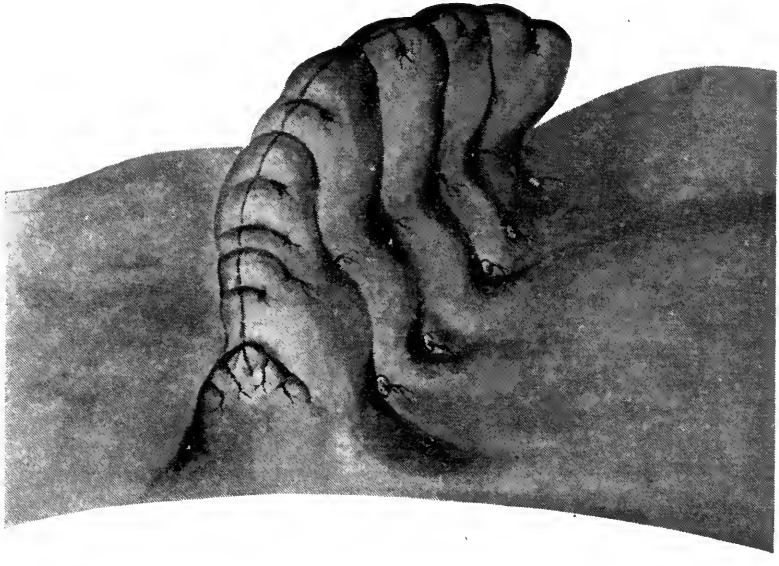


Fig. 2.



superficial fascia. There was no chance of bringing the peritoneum together, since the opening extended from the border of the ribs to the crest of the ileum and from the linea alba to near the quadratus lumborum. The intestines were now cleared from all coagula, the omentum carefully spread over the whole surface exposed to the superficial fascia. The skin was now raised in a fold and five silver wire button-sutures were placed at the base of this mass. Above this, eight deep silver wire sutures and a like number of superficial silk sutures were inserted. Then the wound in the median line was closed by five deep silver wire sutures, taking in the peritoneum from the healthy side; absorbent cotton, iodoform, and a tight bandage finished the dressing. No drainage tubes were used, and the patient was put to bed. The operation lasted three hours. Plate II., Fig. 1, will explain the arrangement of the sutures, and Plate II., Fig. 2, the appearance of this fold of the skin. Plate III. is a photographic view of the abdomen just before removal of the stitches.

The tumor measured twelve centimetres in width by fifteen in length, and twelve in diameter, and weighed 750 grammes, was perfectly solid, and cut like a very hard myoma of the uterus, only it appeared much more dense and no bloodvessels were seen on its cut surface. The anterior sheath of the rectus was inseparably connected with the tumor tissue.

Dr. T. M. Prudden, who kindly examined the tumor for me, sent the following report:

The tumor is a *fibroma*, one of those fibromas which look translucent to the eye *en masse* because of the large amount of interfibrillar fluid. The outer layers of the tumor, on the side covered with peritoneum, were tolerably firmly attached to the latter, but structurally there was a distinct line of demarcation between them.

Nov. 5, 3 P. M. An hour after the operation the patient's pulse was 130; resp. 24; temp. 101°. Complained of some pain during respiration. Later in the day the temp. rose to 102°.

6*th*, 7 A. M. Temp. 101°; pulse 120; resp. 16. Still some pain in the wound, for which five drops of solution of Magendi are given hypodermatically. There is no tympanites and she perspires freely. Vomited at noon of this day. At 6 P. M. temp. was 102°; resp. 19; pulse 124. During the night she passed flatus for the first time.

7*th*, 7 A. M. Temp. $101\frac{2}{5}°$; pulse 124; resp. 18. At 8 P. M. pulse 116; resp. 18; temp. $100\frac{4}{5}°$.

8*th*, 7 A. M. Pulse 112; resp. 18; temp. $100\frac{2}{5}°$. 6 P. M. Pulse 108; resp. 18; temp. 100°.

9*th*, 7 A. M. Pulse 108; resp. 18; temp. 100°. 6 P. M. pulse 108; resp. 18; temp. $100\frac{2}{5}°$.

10*th*, 7 A. M. Pulse 100; resp. 18; temp. 99°; after which there was no longer any rise of temperature.

13*th*. Bowels were moved by an enema, and then removed all except the button sutures, which were removed three days later.

There was union by first intention of the whole large surface of the wound, and the patient left the hospital, with a well-fitting truss, on the 29th of

November. Six months later an abscess formed at the lower margin of the rectus muscle, from which the tumor was removed, and a ligature removed by incision.

Up to the present time there has been no difficulty experienced by the patient from the want of so large a piece of the abdominal muscles. Her breathing is perfectly regular, and only on forced coughing is there be a slight protrusion at the site of the tumor.

CASE II.—Mrs. R. H., married, aged twenty-eight, of good family history, three children, last child fifteen months ago, presented herself on May 28, 1888. She has been ailing more or less for five or six years with pain across the abdomen, dragging-down pain, backache, and some premenstrual pain, otherwise was healthy. Two weeks ago she noticed a pain just above the pubes when leaning against some hard object or when lifting a heavy weight.

Physical examination revealed a deeply lacerated cervix; uterus movable, anteflexed; to right of uterus, not connected with it, was a hard, broad, laterally slightly movable tumor reaching eleven centimetres above the upper edge of the middle of the pubes, and eight centimetres in width. The ovaries could not be made out, and the patient was directed to present herself again for the purpose of anesthesia. She again presented herself on June 30th for the above purpose. The physical examination then showed the following: A tumor, beginning exactly in the median line about two and a half centimetres above the middle of upper portion of the pubes and extending eight centimetres further up, and also five centimetres to the right, is found to be smooth, laterally quite freely movable and with but little motion in an up-and-down direction. The tumor can be grasped by the hand and slightly raised. Respiration does not affect it. Uterus is freely movable and has no connection with the tumor. Right ovary is lodged in Douglas's cul-de-sac and enlarged. Left ovary is normal and in normal position. A very tense and short cord (tendon of the rectus) runs from the tumor to the crest of the right pubic bone. A sound in the bladder indicates that the tumor is outside of that organ. The tumor has no connection with the pelvic organs. The diagnosis is a *desmoid* tumor (sarcoma) in the right rectus muscle, probably originating in its posterior sheath. The operation for its removal was undertaken on July 18th, no particular increase in its size having been noticed at that time. An incision about five centimetres in length was made about two and a half centimetres to the right of the median line and directly over the site of the tumor. After opening the external sheath of the rectus and separating its fibre, the tumor was struck and showed itself of a grayish color, covered on all sides by muscular fibres. The tumor was separated on both sides from the muscular fibres, the tendon cut across and the tumor raised by a vulsellum, and now it became evident that its origin was the internal sheath of the rectus. Knowing that the peritoneum was very loosely attached to the deep fascia, I hoped to separate it without much trouble; but the tumor was so closely adherent to the peritoneum that an opening two by four centimetres broke into the peritoneum at that place where the diameter of the tumor was largest. The enucleation

PLATE III.

was carried on, however, until the upper portion was reached. The rectus muscle was here transfixed, doubly ligated, and the tumor removed. In separating the outer portion of the tumor the deep epigastric was cut and retracted, so that it became quite difficult to secure and ligate it. Hemorrhage at times was very free, and several ligatures were used in different portions of the wound. The torn portion of the peritoneum was closed by continuous catgut suture. The rectus retracted very much, leaving a large opening in its sheath, into which a drainage tube was inserted. The wound was closed by deep silver wire sutures, which carried with them the lateral portion of the cut rectus muscle, the fascia and the skin, and by superficial sutures. I hardly need say that the operation was carried on under the most careful antiseptic precautions. The operation lasted one hour and a quarter. The drainage tube and superficial stitches were removed on the fourth day, no notable rise of temperature having taken place. The patient made a speedy recovery. Plate IV. explains the relative position of the tumor, with its surroundings.

The microscopic examination revealed the tumor to be a true desmoid.

In comparing the experience of these two cases I should say that Case II. was the most difficult to diagnosticate, both on account of the stoutness of the patient as well as its proximity to the pelvic organs, and, unless ether had been administered, would not have been satisfactory.

Concerning the method of operation, there was so much difficulty experienced in separating the tumor from the peritoneum that I would henceforth much rather extirpate portions of the peritoneum as I had done in the first case. The removal will be more complete and there will be less liability to recurrence.

In my studies on desmoids I have remarked the following:

With rare exceptions the tumor originates from the posterior sheath of the rectus abdominis muscle. Continuing to grow, it separates and absorbs the muscular tissue. They therefore naturally produce an elevation in the abdominal walls: but on account of the large deposit of fat on the abdomen, rarely affect the skin. As a rule, however, they also grow toward the abdominal cavity. Thus they may be found to have gone as far as the loose subperitoneal cellular tissue, or they may become closely and inseparably adherent to the peritoneum, and even may break into and through that membrane (Volkmann). The latter ones are, however, most apt to be sarcomatous.

Laterally they may grow to take in the muscles of the loin

and above or below become adherent to the bone of the pelvis or the cartilage of the ribs. The form of the tumor is usually round or oval; at times that portion of the tumor which is connected with the fascia transversalis becomes contracted, and then the form of a shirt-stud results.

The size of the tumor, of course, varies. Commonly a patient will not seek the advice of a physician until the tumor has reached a considerable size, or because of the pain it produces. The smallest in my record of cases was reported by Dr. Heitzmann, of the size of a walnut; the largest by Dr. Weir, of New York, reaching the enormous weight of eleven pounds.

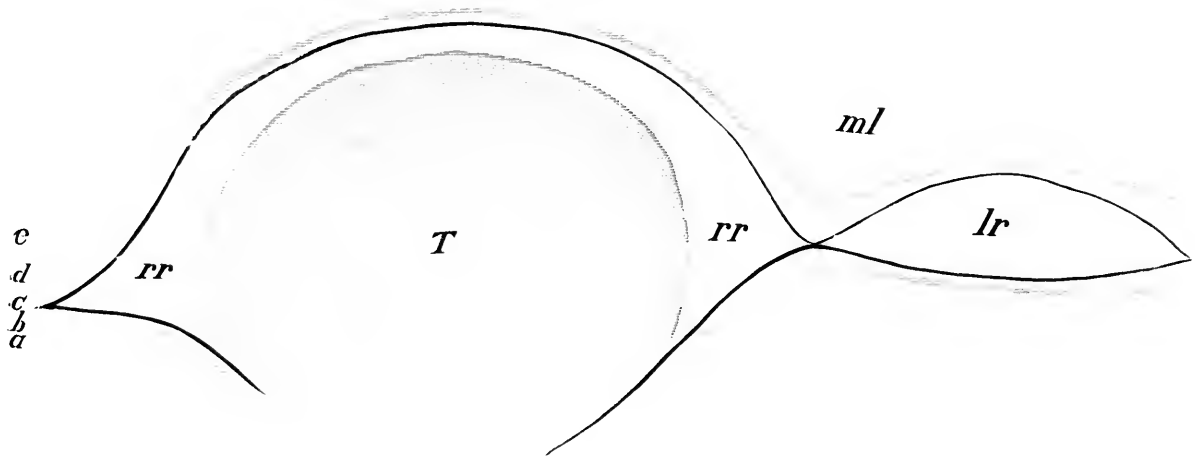
They are fed by the deep epigastric, which enters the rectus at about eight centimetres above the ossa pubes; also the superior epigastric, internal mammary, and lumbales.

Anatomy.—The tumor itself, as a rule, is quite dry and not very bloody. In my first case, however, the quantity of blood which came from the outer portion of the tumor through the torn veins was amazing, and the blood lost in my second case was large, though it came from outside the tumor.

The tumors have invariably been found to originate in the fibrous sheaths of the muscles, and never lie loose between them. Structurally, they are composed of dense fibrous tissue. The growth of the tumor takes place by the production of intercellular fibrous substance. In this way it appears that the cellular tissue is in some portions of the tumor larger than in others, and therefore it will often be difficult to tell whether one portion of the tumor is sarcomatous or still purely fibroid. At times the fibrous tissue will accept (by metamorphosis) a colloid or mucoid appearance. Never, however, has a calcareous or fatty degeneration been observed. A sphacelated, ulcerated, and gangrenous condition, however, is not infrequent (see Parks' case), and hemorrhage of deadly character has occurred. Very frequently the growth begins during a pregnancy and continues with more or less slowness. Suadicani[1] (Esmarch) has observed a cessation of the growth after confinement in two cases. The female seems to be more prone to suffer from this form of tumor. In my own collection of cases eighty-two per cent. were women.

[1] Inaugural Dissert., Kiel, 1875.

PLATE IV.



a. Peritoneum.
b. Subperitoneal cellular tissue.
c. External and internal layer of deep abdominal fascia.
d. Superficial fascia.
e. Skin.
rr. Right rectus muscle.
lr. Left rectus muscle.
ml. Median line.
t. Tumor.

In males they are most apt to be recurrent; thus in four cases in men reported by Volkmann, only one case remained without recurrence. In these cases the recurrent tumors were of a soft sarcomatous character.

Metastases are not mentioned, nor do any speak of glandular infiltrations.

Concerning the *etiology* very little is known. Graetz (Cohnheim)[1] considers that its foundation is laid in the embryo. It seems doubtful, however, whether the origin of these homologous tumors can be explained by his theory. Nor does it seem likely that an injury to the muscles, to which Herzog[2] attributes his case, can be charged with this form of tumor; since no one else ever heard of this form of tumor being the result of injury.

Symptomatology.—As a rule, patients will not present themselves to the doctor until the tumor has reached a large size, or unless it is in such portion of the body where pressure is exerted upon it. We can, therefore, consider that they produce but little trouble in the early stages. When they become large they become troublesome by compression of the abdominal organs, by the disfigurement of the patient, or by the inconvenience produced by the pressure of the clothing, as in my own cases. When they become still larger, gangrene of the skin over the most elevated portion of the tumor, and thus septic infection or deadly hemorrhage may take place. It has been observed that these tumors are more sensitive during menstruation than at any other time. Under ordinary circumstances they are but slightly sensitive to touch. The tumor in my Case I. could be moved about freely without producing any real pain. In Case II. it was more painful on pressure.

Diagnosis.—The fact that between eighty and ninety per cent. of all cases will be women must be taken into consideration when a diagnosis is made; also that the tumor rapidly increases during a pregnancy, though it may have been present before and of very slow growth. From the cases I have collected you will see that the tumor grows two or three times its size in about a year.

By *inspection* the tumor will appear above the surface of the

[1] Cohnheim, Allg. Pathologie, p. 634.

[2] Ueber Fibroma der Bauchdecken, München, 1883.

abdominal walls, if it has reached any large size and the patient is not over-fat. The skin, possibly, is covered by large veins. This will be more so the larger the tumor appears. During respiration the tumor will be lifted forward and backward only, the patient being on her back. When the tumor is of excessive size, forced respiration might cause an upward or downward movement of the growth. There will be no lifting up of the abdominal walls from the tumor on deep inspiration, as is so often seen in intra-abdominal growths.

By *palpation* the tumor will be found to be very circumscribed, at times perfectly smooth (uni-lobular), at others uneven and nodular (multi-lobular), and generally of solid, board-like feel. Occasionally fluctuations will be noticed, as was observed in Dr. Weir's[1] case, and probably accounted for the mistaken diagnosis. If not too large, and occurring in a multipara, the fingers of both hands can almost pass around the tumor and the posterior smooth or nodular surface distinguished. This, however, will not be the case when the patient is directed to contract the abdominal muscle, when the tumor will appear immovable. This must be an important point in the differential diagnosis between a tumor situated within or outside of muscles and fascia. For when the tumor is situated in the subcutaneous cellular tissue it will be movable no matter what condition the muscles are in. If the tumor is intra-peritoneal, any contraction of the muscle will not send the tumor back to its place, as would be the case with a tumor situated in the muscular or fibrous layers of the abdominal walls. If the tumor were in the deep layer of the abdominal muscles, any contraction would tend to throw the tumor into the abdominal cavity.; if in the outer layer, the tendency would be to raise the tumor above the level of the abdominal walls. The tumor will not often be sensitive to pressure.

The percussion note, of course, will be dull all over the region of the tumor. Percussion will often help us out in differentiating between tumors of the abdominal walls and an enlarged spleen, especially when the growth is situated in the

[1] Medical Record, Dec. 3, 1887.

left hypochondriac region. Thus there was a distinct tympanitic resonance between the tumor and the location of the normal spleen-dulness in my Case I.

Thus it was, also, that the tympanites between the left lobe of the liver and the tumor could be noticed only when the patient made a deep expiratory effort. While the dulness over the liver rose and sank by inspiration and expiration, the dulness over the tumor remained stationary. Whether there would be resonance between the kidney and the tumor, if the tumor were situated in the flank, would depend upon the size which the tumor had reached and how far it was pushing itself into the abdominal cavity. In my Case I. there was a distinct and unmistakable resonance between the tumor and the dulness of the region of the kidney. In case of a tumor of the kidney the percussion over the lumbar region of the affected side would be dull, while if it were a desmoid the percussion sound would be normal. The dulness between the tumor and a full bladder could only be mistaken if the bladder was not carefully emptied of its contents. The same might be remarked about a large amount of feces in the colon.

If the tumor were in the lower part of the abdominal wall, possibly closely connected with the ilium and very large, the diagnosis becomes more difficult, and the examination under an anesthetic would probably give the required result. This had to be done with my Case II. before any decision could be obtained. When the tumor is in this region and becomes very large, its differentiation from uterine fibroids, solid tumors of the ovary or round ligament might become impossible, and exploratory incision becomes the proper procedure. A case of localized peritonitis, which originated during pregnancy in the left hypochondrium and simulated a desmoid in many respects, was only understood after aspiration and careful thermometric observation. It seems to me hardly possible that there could be any difficulty in differentiating between malignant tumors of the intestine or omentum and a desmoid.

An adherent displaced kidney might be taken for a tumor in the abdominal walls. But the form of the kidney and resonance over that portion of the lumbar region where the kidney was missing, and the muscular symptoms of which I

have just spoken, would probably give the necessary information.

The sense of touch given by adipose tissue, whether as a lipoma of the omentum or sub-peritoneal or subcutaneous fatty tissue, is so much different from that of a desmoid that they could hardly be confounded with each other. Thus, also, an umbilical hernia containing a lipoma of the omentum would present a *soft*, lobulated condition, which is never the case in the desmoids.

A ventral or umbilical hernia could, if strangled, produce a tumor which is very hard, but the symptoms of strangulation and the outer appearance of the tumor, and other points in the history of the case, would leave no doubt as to its nature.

Cysts of the urachus cannot possibly be confounded with desmoids; since these cysts commonly empty themselves by the navel or bladder, thus producing a disappearance of the cyst temporarily.

Desmoids of the abdominal walls are rare, since only one case, by Nélaton, has been described, and very possibly it came from an ovary, as did the myoma of Dr. Marcy's case come from the uterus.

The *treatment* is extirpation, and the sooner this is done the better for the patient.

While the tumors are still small and in a location where the peritoneum is not closely adherent to the deep fascia, extirpation without opening the peritoneum may be resorted to, and must be our aim, but it will rarely succeed. As a rule, however, extirpation with resection[1] of the peritoneum will be, under careful antiseptic precautions, the safest by guarding against recurrence, should the tumor prove to be sarcomatous.

The prognosis of the true desmoid after removal is good so far as its benign character is concerned. The prognosis without extirpation must be almost fatal unless we consider such fortunate cases as those reported by Suadicani. Thus, also, will partial removal result disastrously, as Esmarch's second case would prove.

[1] Sänger, Archiv für Gynäkologie, Band 24, p. 20.

I have for my instruction collected as many cases of desmoids and other tumors of the abdominal walls, as I was able to reach by correspondence with American surgeons and reference to American medical literature. I have appended the result, and wish to draw your attention to a few of the following points:

Among the desmoids all but two were females. Among these the ages ranged between twenty-three and forty-one years. The ages of the males were eight and forty-five years. The longest time any of the tumors was known to exist was four years. (Dr. Weir.)

In five cases the origin of the tumor was given as the fascia transversalis; in one, the fibres of the internal oblique muscle. The knife was the treatment in every case. In six cases the tumor was so *closely adherent* to the peritoneum that this cavity was opened by rupture of that membrane, and in two of these by excision of large portions. And, lastly, that they all have recovered. From personal correspondence I know that Dr. Thomas has removed four such tumors, and that he will publish the results himself.

Of the other forms of tumors, five were females and two males. Five cases were denominated sarcoma, one each a recurrent fibroid, and one calcareous myoma.

Five of the tumors were removed by operation. They all recovered, but recurrences are noticed in three of these.

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No.	Reporter.	Age	Family history as to tumors generally.	Sex	Length of time the tumor was known to exist.	Location.	Size when first noticed.	Size when last seen by the operator	Length of time intervening.	Reporter's opinion of the origin of tumor.	Probable or possible cause.	Treatment.	Result.	Anatomical character of tumor.	Remarks.
1	T. G Richardson, New Orleans.	30	.....	F.	.....	Right iliac.	.....	Goose egg.	.....	.....	.....	Excision.	Cured.	Strictly fibrous.	"The peritoneum was closely attached to the posterior surface, covering about a square inch. In endeavoring to dissect off the serous membrane the peritoneal cavity was opened, but as no blood entered irrigation was not practised. Drainage tube used, but not entering the peritoneal cavity."
2	C. Heitzmann, New York.	45	.....	M.	.....	Left lower iliac region.	Hazelnut	.....	.....	.....	.....	Excision.	Cured.	Dense, fibrous connective-tissue bundles freely interlacing.	
3	D. W. Cheever, Boston, Mass.	25	.....	F.	.....	Betw'en umbilicus and pubes.	.....	Size of ostrich egg.	.....	.....	.....	Removal.	Cured.	Solid.	No recurrence. Involved peritoneum on under surface by contiguity. Peritoneum was opened at time of removal.
4	R. F. Weir, New York.	41	.....	F.	4 years.	Both iliacs and umbilical region.	.....	11 lbs.	.....	Transversalis fascia	.....	Extirpation.	Cured.	Purely fibrous tissue.	Reported in the Medical Record, Dec. 3, 1887. Peritoneum as large as two hands was removed with the tumor, and peritoneum brought together by nature.
5	C. K. Briddon, New York,	27	None.	F.	9 mos.	Right inguinal	.....	.....	.....	Fascia transversalis.	.....	Extirpation.	Cured.	.....	Peritoneum was *not* opened. Report in Medical Record, December 3, 1887.
6	J. A. McGraw, Detroit, Mich.	23	None.	F.	Not recorded.	Right iliac fossa.	.....	Double fist.	Several years.	None.	.....	Extirpation	Cured	Fibroma.	Peritoneum not opened.
6	" "	30	None.	F.	Not recorded.	Right iliac fossa.	.....	Double fist.	Several years.	None.	.....	Extirpation.	Cured.	Fibroma.	Peritoneum not opened

7	Chris. Fenger, Chicago, Ill.	20	None.	F.	6 mos.	Lower part of left hypogastric region.	Walnut	3½×2½ inches.	6 mos.	Tendon of the internal oblique abdominal muscle.	None.	Extirpation on Jan. 31, 1886, in Cook Co. Hospital	Cured.	"Firm fibroma microscopical appearance of a uterine fibroid"	Peritoneum was not opened since "the fascia transversalis could be peeled off the abdominal surface of the tumor."
8	Reeves Jackson, Chicago, Ill.	8	None.	M.	Not known.	Umbilical, right hypochondriac, lumbar, and hypogastric regions.	.....	Probably 3×5 inches.	.....	Not given.	.....	Enucleation.	Cured.	"Macroscopical character of a uterine fibroid perhaps less dense."	Enucleation and very slight loss of blood; peritoneum not opened. Recovery prompt.
9	D. Prince, Jacksonville, Ill.	?	None.	F.	.....	.....	.....	4 inches in diamter.	.....	.....	.....	Extirpation.	Cured.	Macroscopic appearance of a fibroid.	Peritoneal cavity *was* not opened.
10	R S. Sutton, Pittsburg, Pa.	23	None.	F.	2 years,	Right inguinal and umbilical region.	Small.	Size of orange.	2 years.	Fibres of internal oblique.	.....	Extirpation.	Cured.	Macroscopic appearance that of a fibromyoma.	The tumor never returned; peritoneum not opened; the wound healed by first intention [1]
11	Edward J. Ill, Newark, N. J.	28	None.	F.	16 mos.	Above the left lumbar and umbilical region.	7–10 centimetres.	16×20 centimetres.	9 mos.	Fascia transversalis, *i.e.*, posterior sheath of rectus abdominis	.....	Extirpation.	Cured.	Purely fibrous tissue.	Case I. of my paper. Peritoneal cavity was opened, and about 100 square centimetres of peritoneum removed.
12	" "	30	None.	F.	6 w'ks	Right iliac in rectus abdominis.	5–8 centimetres.	No appreciable difference.	6 mos.	Posterior sheath right rectus abdominis.	.....	Extirpation.	Cured.	Purely fibrous tissue.	Case II. of my paper. Peritoneal cavity was opened.

[1] Very probably this was a true fibroma and is reported under this heading for that reason, no microscopical examination having been made.

Other Forms of Tumors of the Abdominal Walls.

No.	Reporter.	Age	Family history as to tumors generally.	Sex	Length of time the tumor was known to exist.	Location.	Size when first noticed.	Size when last seen by the reporter	Length of time intervening.	Reporter's opinion as to the origin of the tumor.	Probable or possible cause.	Treatment.	Result	Anatomical character of tumor.	Remarks.
1	J W. Gouley, New York.	30	.....	M.	.....	Left flank and lumbar region.	.....	.....	.....	.....	.....	Remov'l of tumor and its recurrence at five different times.	Recurrence a few months after last operation, and death.	Spindle-celled sarcoma	
2	R. Park, Buffalo, N. Y	36	None.	F.	Difficult to say as there was a hernia of congenital origin.	Umbilical region.	.....	258 lbs	.....	Tumor arose from the sac wall.	.....	Complete excision of tumor and hernial sac in July 1885.	Cure.	Fibro-sarcoma	Had given particular trouble since two years. No return after operation. Sac and all was so large that when she sat down the tumor touched the chair before the buttocks did.
3	H. T. T. Hanks, New York.	27	None.	F.	6 mos.	Right inguinal	1 inch in diameter.	2×3 inches.	6 mos.	?	.....	Extirpation.	Cure(?)	Recurrent fibroid.	A year after the first operation the reporter removed a second one on the opposide side, and after two years more two further tumors appeared in other parts of the walls of the abdomen. (Partly reported in the American Journal of Obstetrics, 1884, partly by personal correspondence.")

4	H. O. Marcy, Boston, Mass.	...	Not given.	F.	.....	.....	.....	.....	.....	Uterine.	.....	Extirpation	Cure.	Calcareous myoma.	The tumor was removed by the late Dr. H. A. Martin, of Roxbury, Mass., and is said to have been in the abdominal wall. Whether it formed part of the abdominal muscles is not spoken of. The tumor was removed without opening the abdominal cavity. Dr. Marcy thinks it a uterine myoma that became detached from the uterus.
5	R. S. Sutton, Pittsburg, Pa.	70	None.	M.	Some weeks.	Below navel to right side.	Walnut.	Walnut.	A few weeks.	Oblique fibres of the abdominal muscles.	.....	Extirpation	Recovery.	Not known.	Patient died, seven or eight years later, of sarcoma in the corresponding groin.
6	" "	40	None.	F.	1 year.	Right groin	Small.	Goose egg.	1 year.	Deep cellular tissue of the abdominal walls.	.....	None.	Death.	Sarcoma	Growth of the tumor very rapid.
7	" "	22	None.	F.	More than a year.	Above Poupart's lig'ment on left side.	Small.	Goose egg.	1 year.	Fibres of the obliquus externus.	Blow.	None.	Death.	Sarcoma	Patient declined extirpation.

DISEASES OF THE SKIN ASSOCIATED WITH DISORDERS OF THE FEMALE SEXUAL ORGANS.

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Although disorders of the sexual apparatus, in both male and female, are not rarely considered to hold a causative relation to cutaneous eruptions, the special literature upon this subject is very indefinite and scanty. Text-books on dermatology vaguely mention uterine disturbances as etiological factors of certain skin diseases, as chloasma, urticaria, and acne, while systematic works on tocology and gynecology, so far as known to the writer, are almost entirely silent upon these relations.

The writer makes no pretence to completeness in the following pages, but he has endeavored to bring together briefly many of the scattered observations on record, which seem to show a relationship or coincidence between sexual derangements and cutaneous eruptions.

The various cutaneous lesions occurring in connection with sexual disorders in females may be divided into the following classes:

1. *Angioneuroses.*
   - *a.* Edema.
   - *b.* Erythema.
   - *c.* Urticaria.
   - *d.* Acne rosacea.
2. *Disorders of the Glands.*
   - *a.* Hyperidrosis.
   - *b.* Chromidrosis.
   - *c.* Bromidrosis.
   - *d.* Seborrhea.
   - *e.* Acne simplex.

3. *Inflammations.*
   - *a.* Eczema.
   - *b.* Herpes.
   - *c.* Dermatitis herpetiformis.
   - *d.* Pemphigus.
   - *e.* Erysipelas.
   - *f.* Furunculosis.

4. *Pigmentary Hypertrophies.*
   Chloasma.

5. *Neuroses.*
   - *a.* Pruritis.
   - *b.* Dermatalgia.

6. *Vascular Dystrophies.*
   Purpura.

1. Angioneuroses.

In a recent paper Prof. Ernst Börner, of Graz,[1] treats at some length of neurotic tumefactious (edemas) occurring as accompanying phenomena of menstruation and the climacteric period. A considerable number of cases is reported in which evanescent or more persistent swellings of the lips, cheeks, eyelids, feet, hands, and other portions of the body occurred contemporaneously with the menstrual period, or gave trouble during the disturbances of function classed under the designation "the change of life." In many of these cases there were also present other neurotic manifestations, such as headache, neuralgia, or various other paresthesias. These tumefactions are similar to those reported by Quincke,[2] Jamieson,[3] and Riehl,[4] and are always related to disturbances in the sexual apparatus.

Dr. Deligny[5] gives a review of the various affections of the skin encountered in females at the time of puberty and the menopause, and enumerates hyperidrosis, erythemas, eczema, acne rosacea,

[1] Ueber Nervöse Hautschwellungen als Begleiterscheinungen der Menstruation und des Klimax. Volkmann's Sammlung Klinischer Vorträge, No. 312.
[2] Monatshefte f. prakt. Dermatologie, Bd. i. Heft 5.
[3] Edinburgh Medical Journal, June, 1883.
[4] Wien. med. Wochenschrift, Nos. 24, 26, 1887.
[5] Le Concours Médical, April 14, 1888.

pemphigus, pruritus, urticaria, pigmentary hypertrophies, and erysipelas. A case of acute circumscribed edema in a neurotic dressmaker of twenty-eight years of age, is reported by Dr. E. B. Bronson,[1] but no mention is made of the condition of the genital apparatus in the patient.

Erythema multiforme, erythema nodosum, and urticaria, especially the more chronic or recurrent forms, are not infrequent accompaniments of sexual disturbances in women, occurring not only in connection with menstruation, but also as complications of diseases of the uterus.

In a case recently under the care of the writer, the patient, a neurotic girl of eighteen, suffered from an intense outbreak of urticaria at each menstrual period, although milder attacks also occurred in the intervals.

Mr. Lawson Tait has recently reported a number of cases in which urticaria came on after abdominal section. Hebra first called attention to the frequent association of urticaria with uterine disorders. Scanzoni has likewise pointed out this coincidence.

The frequently recurring flushings of the face are well known to all practitioners as characteristic symptoms of the change of life.

Acne rosacea, while it sometimes occurs at puberty, is much more frequent at the menopause. When it exists before the change of life it is generally very much aggravated at that period, while its beginning can often be traced to the frequent congestion of the face (flushes) so constant a symptom of the climacteric.

2. Disorders of the Glands.

Dr. Deligny mentions hyperidrosis as frequent at the menopause, and more rare at puberty. The sweating may be localized or general. Every gynecologist must have noticed the strongly odorous perspiration which is so often an accompaniment of menstrual irregularity. Colored sweat is also sometimes found in company with uterine or ovarian disorder. In this category probably belong the cases of bloody sweat, or ephidrosis cruenta, so far as the reports may be considered as trustworthy. So competent an observer as Dr. McCall Anderson has reported[2] an interesting case of this affec-

[1] Journal Cutan. and Gen.-Urin. Dis., August, 1888.

[2] Journal Cutan. Med., vol. i. p. 328; and Dis. of the Skin, p. 481, 1887.

tion and has quoted a number of others from Erasmus Wilson, T. K. Chambers, Pinel, and other authors. It is noticeable that in all but one of the cases mentioned, the points of appearance of the bloody fluid were on the front of the body, or on such portions of the surface as could be readily reached with the hands.

Duhring[1] states that colored sweat is "not infrequently connected with uterine disorders," and gives references to a large number of reported cases.

A case is described by Dr. Parvin[2] in which there was an emergence of blood, with purplish discoloration of the lips at the menstrual periods. Other cases are referred to by Dr. Parvin in which the mammary gland, the external auditory meatus, and the umbilicus were the source of the bleeding. These cases are usually called vicarious menstruation, or, as Dr. Parvin proposes, xenomenia; but the question of vicarious menstruation seems to the writer still an open one. In all cases similar to those here referred to, the honesty of the patient is open to grave suspicion.

Seborrhea is often associated with menstrual derangements in chlorotic girls at and after the period of puberty.

Acne is so frequently associated with menstruation, that every practitioner is familiar with the relationship between this skin disease and the uterine and ovarian functions. The writer thinks he has observed one form of acne which may be classified and which he has ventured to term "menstrual acne." It differs from the ordinary form of acne in being rarely distinctly pustular, the eruption coming out in the course of a few days preceding or at the beginning of the menstrual period, and frequently disappearing with the menstrual discharge, without proceeding to suppuration. In passing it may be mentioned that a very efficient remedy for this form of acne is arsenic in doses of $\frac{1}{100}$th grain, thrice daily, combined with the external use of a two per cent. lotion of resublimed resorcin in diluted alcohol.

Acne vulgaris is usually aggravated during the menstrual period, but the eruption of new lesions does not cease in the interval, and pustulation is often very marked. In these cases I have usually found arsenic to aggravate the eruption.

[1] Diseases of the Skin, 3d ed., p. 143, 1882.

[2] Gynecol. Trans., vol. i. p. 135.

3 Inflammations.

Hebra[1] speaks of the frequent coincidence between eczema and menstrual anomalies. These menstrual eczemas, he says, are especially localized on the scalp, face, or lips. In the course of pregnancy, also, eczemas frequently appear, generally in the earlier months, and continue in spite of all treatment to the end of gestation. These eczemas are usually localized upon the hands. Some women, who have repeatedly been pregnant, are able to determine the presence of pregnancy in themselves by the outbreak of the eczematous eruption on their hands. Th. Veiel[2] reports an interesting case in which the eczema appeared in the third month of the patient's third pregnancy and continued until the termination of the puerperal period, when it disappeared without treatment. The eruption was limited to the extensor surfaces of the forearms, and recurred at five consecutive subsequent pregnancies.

Hebra also refers to the eczema occurring during or after lactation. Sterile women, too, are subject to recurrent eczemas, although these may generally be traced to some defined lesion of the uterus or ovaries. The writer has noticed a form of acute, generalized eczematous eruption not described by other writers, which occurs in association with laceration of the cervix uteri. The eruption extends over nearly the entire surface, is finely vesicular, and accompanied by the most intense itching, fever, and subsequent exfoliation of the epidermis. No treatment, addressed to the cutaneous disease, seems to be of any avail until the uterine lesion is remedied.

Climacteric eczema is referred to by Hebra, and Mr. W. Allen Jamieson in his recent work devotes[3] some attention to this form. He says: Usually the monthly loss has ceased when the eczema appears. This form exhibits a proneness to relapse and to recurrence of the eczema in certain definite regions for many years. More than three-fourths of the cases occur on the scalp and ears. The extremities also may suffer, but the trunk is scarcely affected in any case. The scaly and weeping varieties predominate, in contrast to the pustular form, which attacks infants. Itching is well marked. From the commencement to the close there may be no more than a

[1] Hautkrankheiten, Bd. i. p. 456.
[2] Ziemssen's Hdb. f. Spec. Path. u. Ther., xiv. 1, p. 364.
[3] Diseases of the Skin, Edinburgh, 1888, p. 257.

dry pityriasis eczema, with some loss of hair, liable however, to be transformed into the moist form by external or internal irritants. Arsenic exerts considerable influence in restraining the disease, and the best local remedy seems to be the ointment of the ammoniated mercury. In some cases, however, a lotion of liquor carbonis detergens and liquor plumbi subacetatis is better."[1]

Eczema of the mammæ may also be referred to here. It is usually associated with lactation, which furnishes the irritant cause for its peculiar localization. Especial attention is claimed, however, by a peculiar form of eczematous inflammation of the mammary gland, which is especially liable to eventuate in malignant disease. This was first mentioned by Sir James Paget, and is usually described under the name of "Paget's disease of the nipple." This affection is so important in its possible results, and so little attention has apparently been paid to it by gynecologists in this country, that no apology is necessary for quoting at some length from the original description given by Sir James Paget. This writer had seen about fifteen cases of the disease before 1874. His account of the affection is as follows:

"The patients were all women, varying in age from forty to sixty or more years, having in common nothing remarkable but their disease. In all of them the disease began as an eruption on the nipple and areola. In the majority it had the appearance of a florid, intensely red, raw surface, very finely granular, as if nearly the whole thickness of the epidermis was removed; like the surface of very acute diffuse eczema, or like that of an acute balanitis. From such a surface, on the whole or greater part of the nipple and areola, there was always copious, clear, yellowish, viscid exudation. The sensations were commonly tickling, itching, and burning, but the malady was never attended by disturbance of the general health.

"I am not aware that in any of the cases which I have seen the eruption was different from what may be described as long-persistent eczema, or psoriasis, or by some other name, in treatises on diseases of the skin; and I believe that such cases sometimes occur on the breast, and after many months' duration are cured, or pass by, and are not followed by any other disease. But it has happened that in every case which I have been able to watch, cancer of the mammary gland has followed within at the most, two years, and usually within one year. The eruption has resisted all treatment,

[1] ℞.—Liquor plumbi subacetatis . . . . . ℥ss.
Liquor carbonis detergens . . . . . ℥ijss.

Sig.—One teaspoonful, mixed with a pint of warm water, to be applied with a sponge twice a day.

both local and general, that has been used, and has continued even after the affected part of the skin has been involved in the cancerous disease.

"In practice the question must be sometimes raised whether a part through whose disease or degeneracy cancer is very likely to be induced, should not be removed. In the member of a family in which cancer has frequently occurred, and who is at or beyond middle age, the risk is certainly very great that such an eruption on the areola, as I have described, will be followed within a year or two by cancer of the breast. Should not, then, the whole diseased portion of the skin be destroyed or removed as soon as it appears incurable by milder means."

Microscopic examinations of the tissues in Paget's disease which have been made by Dr. George Thin, in England, and the late Dr. Henry Wile, in this country, seem to show that the disease is epitheliomatous at a very early stage, if not from the beginning. A number of cases which have been carefully noted by competent observers (Paget, Bulkley), show that the diagnosis between true eczema of the mammæ and Paget's disease is not always easy. But the fact still remains that in an individual predisposed to cancer, any persistent irritation may determine the points where the disease will localize itself. In the opinion of the writer, cancer of the breast, or of any other part, may result as the direct consequence of the irritation of a prolonged eczema. It is especially advisable, therefore, that all mammary eczemas should not be neglected, but should be cured as quickly as possible.

Prof. McCall Anderson gives a table of diagnostic points between Paget's disease and eczema of the nipple which may aid in the differentiation.

Paget's Disease.	*Eczema of the Mamma.*
1. Occurs in women over forty years of age.	1. Generally in women before the age of forty; especially during lactation.
2. Surface affected, in typical cases, of brilliant red color, raw and granular-looking after removal of crusts.	2. Surface not so red and raw looking, and not granular, but often punctated.
3. When grasped between the thumb and forefinger, superficial induration often felt, "as if a penny were laid on a soft, elastic surface, and grasped through a piece of cloth."	3. Infiltrated, but no induration.

[1] St. Bartholomew's Hospital Reports for 1874.

4. Edge of eruption abrupt and sharply cut, and often elevated.	4. Edge not abrupt. Never elevated.
5. Very obstinate; and only yields to extirpation or other treatment applicable to epithelioma generally.	5. Obstinate sometimes, but yields to treatment appropriate to eczema.

Recurrent herpes of the genitals is probably sometimes due to intra-pelvic lesions involving the cutaneous nerve supply.

The miliary eruption occurring in the course of puerperal fever must be considered (with the so-called puerperal scarlatina) merely as a manifestation of septicemia.

The remarkable disease first described by Hebra as impetigo herpetiformis, occurs almost always associated with pregnancy or the puerperal state. It is not yet clearly established what the etiological relations of this curious affection are. A summary of a recent paper of Kaposi on the subject[1] indicates that the views of this excellent observer are somewhat indefinite. He regards impetigo herpetiformis as "an expression of some reflex nervous and vaso-motor disturbance, and as related in this sense to chloasma, urticaria, and pemphigus (herpes) gestationis of pregnant, puerperal, and uterine cases." Dermatologists on both sides of the Atlantic are now earnestly investigating this formidable disease, and it is hoped that we may soon be able to assign it to a definite place in our classifications.

Pruriginous bullous eruptions, recurring at successive, though not necessarily consecutive pregnancies, and termed variously herpes gestationis, hydra gestationis, and pemphigus hystericus, are especially interesting in this connection. It is not yet definitely established whether the generalization of Prof. Duhring, that all the bullous lesions classed by him under the heading "dermatitis herpetiformis," is true or not. Most dermatologists are inclined to differ from Duhring's conclusions. The latest contribution to the subject is an exhaustive paper by Dr. Brocq, of Paris, who analyzes twenty-two cases of pemphigoid eruptions occurring during pregnancy, or during the puerperal period. The striking symptoms are: General pruritus or burning sensations, attended by fever; following this, erythematous patches, especially on the extremities, and papular, vesicular, or bullous lesions, sometimes becoming purulent. In some cases there is great prostration. The appetite

[1] Annual of Universal Med. Sciences, 1888, vol. ii.

is not affected. The disease is not fatal, and, while not amenable to remedies during the continuance of gestation, usually disappears without treatment after the pregnancy is terminated. It presents marked contrasts to the impetigo herpetiformis of Hebra. In Dr. Brocq's very excellent monograph,[1] which came to hand after this paper had been sent to the printer, "dermatitis herpetiformis" is divided into three classes, one of which is constituted by the herpes gestationis, or pemphigus hystericus. Dr. Brocq names this "dermatite polymorphe prurigineuse recidivante de la grossesse."

Erysipelas is reported by a number of authors as occurring in greater frequency at the menopause, but it is probable that this is merely a coincidence. Some of the cases reported as erysipelas and erysipeloid are doubtless to be classed with the tumefactions and erythemata above referred to.

Furunculosis is not infrequent at the menopause, and appears sometimes to have some relation to menstrual irregularities. When occurring at or after the climacteric, careful examination will often detect the presence of glycosuria which is a rather common affection at that period of life. In young girls, furunculosis appears to be at times associated with menstrual derangements dependent upon anemia. If we consider furunculosis as an infective inflammation and necrosis, as modern pathology teaches, the relationship between disturbances of the menstrual function and furuncular eruptions is somewhat obscure. It is not improbable that the temporary lowering of vitality during menstruation may promote the infective process.

4. Pigmentary Hypertrophies.

Localized increase of the cutaneous pigment is one of the most frequent accompaniments of derangements of the generative apparatus in the female. The surface usually affected is the face, although in some cases reported the entire body has shown a marked discoloration. The commonest forms of the pigmentation are those known under the terms moth patches, mask, liver spots, chloasma uterinum, etc. They are yellowish-brown to dark brown in color, and are most frequently found on the forehead, cheeks, chin, and eyelids. They are found associated with the most varied

[1] De la Dermatite herpetiforme de Duhring, Paris, 1888.

uterine affections, and are likewise not rare in pregnancy. Women subject to menstrual irregularities are especially prone to this pigmentary hypertrophy. A number of curious cases of deep pigmentation of various parts of the body are recorded in the literature. Thus Le Cat[1] refers to a case in which the left leg became black during each pregnancy. Erasmus Wilson[2] reports a case of extensive pigmentary deposit in the skin of a woman of nineteen. The pigmentation had followed a nervous shock accompanied by menstrual irregularities and hysterical seizures. The same author[3] relates two other cases, one coincident with pregnancy, and the other with menstrual derangement following typhus fever. A singular case is quoted from Laycock:[4] "A woman was condemned to death by a Parisian mob. The 'lantern' was let down before her at the moment she was menstruating; menstruation immediately ceased. Her execution was deferred, and a few days after her skin became as black as that of a moderately black negro. The tint was deeper on the neck and shoulders than on the face; on the face and chest the tint was the same; it was less deep on the abdomen and the legs. The joints of the fingers were blacker than other parts; the soles, palms, and folds of the skin in the inguinal region paler. She became languishing (anemic). She died in 1819, aged seventy-five years, more than thirty-five years after the shock, the skin remaining dark until death."

A pigmentary deposit about the eyelids is not infrequent during menstruation and pregnancy. This seems to be a true pigmentation in the skin, and is not of the character called stearrhea nigricans in the books. The latter affection is probably always feigned, the pigmentation being produced by the patient herself, ink, burnt cork, lampblack, or other pigment being used. The writer has knowledge of a case of this sort in a married woman suffering from uterine catarrh accompanied by hysterical symptoms, in which the discoloration was produced by ink. The cheat was easily detected by applying a solution of oxalic acid, which startled the patient into a confession. Another case, doubtless of the same character, was recently brought to the notice of the writer. A suggestion that the malady was feigned proved an effectual bar to an examination, the patient dismissing her attending and consulting physicians, and

[1] Quoted by Dr. Robert Barnes: Gynecol. Trans., vol. i.

[2] Journal Cutan. Med., vol. iii. p. 305.

[3] Dis. of Skin, 5th ed., Phil., 1863.

[4] See Barnes, loc. cit.

refusing to allow a close inspection of the pigmentary deposit. Dr. Barnes[1] quotes a case from Mr. Yonge which is unquestionably of the same character. The patient was a hysterical girl of sixteen, who had never menstruated.

The facial pigmentation of pregnancy usually disappears after the puerperium, but when it is persistent it can be readily removed (temporarily at all events) by several harmless external applications. The one most frequently successful is a combination of ammoniated mercury and subnitrate of bismuth.[2] This is applied to the affected surface in a thin layer every night, and washed off in the morning. Should it render the skin red or slightly scaly, or cause smarting or other subjective symptoms of irritation, its use may be intermitted for a few days, or the strength somewhat diminished. The epidermis is gradually exfoliated, removing the excess of pigment, and the new skin has a healthy, pinkish tint. After this result is attained, the remedy should be continued in a weaker preparation or at longer intervals. The same result may also be obtained by a solution of mercuric bichloride (1–2 parts in 1000) or by a one to three per cent. solution of salicylic acid.

Mention may here be made also of jaundice, which sometimes occurs as a complication of menstruation or pregnancy. This may occur in an epidemic form, as in an instance related by Dr. St. Vel, of Martinique (quoted by various authors), in which thirty pregnant women were attacked, of whom twenty miscarried and died. Of the children, all but one died; neither the fœtuses prematurely expelled, nor those afterward born at full term, of the mothers who recovered, had any sign of jaundice. In grave or fatal sporadic cases of jaundice occurring during pregnancy, the icterus is usually a symptom of acute yellow atrophy of the liver, which seems to have a special predilection for pregnant women.

5. Neuroses.

Pruritus as an accompaniment of pregnancy or of derangements of the sexual organs, is a very frequent condition. In some persons it is a regular accompaniment of the menstrual period, but this is

[1] Loc. cit., from Phlios. Trans., 1709.

[2] ℞.—Hydrargyri ammoniati } . . . . . āā ʒj.
Bismuthi subnitratis }
Ungt. aquæ rosæ . . . . . ʒj.—M.
Apply at night.

rare. In cases of uterine or vaginal catarrh, where acid secretions bathe the external genitals, vulvar pruritus is both frequent and intense. The same localized form of itching is often present in pregnancy, sometimes beginning early in gestation and lasting until after delivery. In certain cases persistent pruritus vulvæ is due to the accumulation of sebaceous secretion under the prepuce of the clitoris. The writer recalls a case of this sort where the most potent anti-pruritic remedies failed to give relief, until a careful ocular examination revealed the hidden source of irritation.

Pruritus vulvæ is a frequent attendant upon the climacteric period, and is here often associated with glycosuria. Happily, the form of glycosuria which so often occurs at this period does not seem to be a grave affection, but to yield readily to remedies, and sometimes even to pass away without treatment. In not a few cases the climacteric and post-climacteric pruritus is generalized, and may sometimes be due to the nutritive disturbances of the skin occurring in advanced age.

Dermatalgia and hyperesthesia of the skin are also occasionally noted as symptoms of the hysterical state, when the latter is due to ovarian or uterine derangement, as well as when the "hysteria," so-called, is a manifestation of disease of the central nervous system.

Certain trophic changes in the skin must, in the present state of our knowledge, be referred to a hypothetical perversion of function of an assumed system of trophic nerves. To these changes belongs that remarkable condition described as morphœa by most dermatologists, and classed by others with scleroderma. In the overwhelming majority of cases, morphœa occurs in women during the period of sexual activity. Out of twenty-five cases observed by Sir Erasmus Wilson, twenty were in females. In commenting upon this disproportion, this distinguished dermatologist adds: "Referring to the phenomena of the female constitution, fifteen of the twenty cases might be attributed to causes taking their origin in the uterine functions, namely, nine in pregnancy and six in menstruation.[1]

6. Vascular Dystrophies.

Purpura is rarely found as a manifestation. A case has been brought to the notice of the writer by a professional friend, in

[1] Journal Cutan. Med., vol. ii. No. 6.

which a purpuric eruption appeared on the lower extremities every month while the menstrual flow was arrested. Many of the cases of so-called "vicarious menstruation" already referred to on a previous page, might appropriately be classed as purpuric eruptions. The fact, however, that so many substitutive hemorrhagic manifestations occur on the front of the body, or on such surfaces which are readily reached by the patient herself, renders most of these cases open to grave suspicion, and requires the most careful objective examination before they can be accepted.

THE RESUSCITATION OF ASPHYXIATED NEWBORN INFANTS BY THE SUSPENSION METHOD.

By LLEWELLYN ELIOT, M.D.,
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The subject to which I venture to call your attention, "The Resuscitation of Asphyxiated Newborn Infants by the Suspension Method," may seem dull, but the vast importance which attaches to it, in view of the number of stillborn infants reported, will serve, in a measure, to dissipate its dulness.

For many years the resuscitation of such children has claimed my attention, and it is my belief that many cases reported as stillbirths have been proper subjects for the successful employment of the suspension method. This belief leads me to present the observations here recorded, hoping that my success in its employment will lead others to have recourse to it. The extreme simplicity of its application should be a strong argument in its favor, and as it does not interfere with the employment of other measures it may, in this light, be considered a *dernier ressort.*

In consulting works upon obstetrics, this method of treatment of asphyxiated infants is conspicuous by its omission, but now and again it is mentioned in medical journals[1] as a method which might prove of success.

The Report of the Health Officer of the District of Columbia[2] shows the number of births reported during the nine years—1879 to 1887—to be 31,815; of this number, 3390 are recorded as stillbirths. This will give a percentage of stillbirths to births of 10.7 for the nine years. For the year ending

[1] Conner, J. J., Med. and Surg. Reporter, vol. 58, p. 631.
[2] Report of the Health Officer District of Columbia, 1887, pp. 156 and 157.

June 30, 1887, the births reported numbered 3728; of this number, 406 were reported as stillbirths, or a percentage of stillbirths to births of 10.9. These figures do not include all cases of births or stillbirths, but only those that are reported to the Health Officer, and I have nó doubt the percentage would far exceed these figures if all cases of birth and stillbirth were reported. Among the causes of stillbirths, or asphyxia neonati, are protracted labor, where the head has been exposed to long-continued and severe pressure; the premature detachment of the placenta; the too frequent administration of the hydrate of chloral during the labor; the knotting of the funis; and coiling of the cord about the child's neck, tightly constricting it.

During four years' residency at the Washington Asylum Hospital of this city, my opportunities for observation in the practice of obstetrics were unequalled, and the practice of the various methods of resuscitation of stillborn infants was watched with a great degree of interest. Among the many methods that have been suggested and put into practice may be mentioned, artificial respiration in its various forms; slapping; dashing cold water in the face; dipping the child into cold water and then into hot water alternately; exposure to cold; and allowing the cord to bleed. These different measures have met with both success and failure, but I consider the method of suspension by the feet superior to any or all of them. It can be employed by any one, and is not attended with danger.

The following authors do not mention this method: Playfair,[1] Bedford,[2] Maygrier,[3] Ramsbotham,[4] King,[5] Leishman,[6] Landis,[7] Lusk,[8] Smith,[9] Verrier,[10] Collins,[11] Parvin,[12] and Charpentier.[13] Dewees,[14] when writing "of the necessary

[1] Playfair, System of Obstetrics.
[2] Bedford, Prin. and Pract. of Obstetrics.
[3] Maygrier, Midwifery.
[4] Ramsbotham, Obstet. Med. and Surg.
[5] King, Manual of Obstetrics.
[6] Leishman, System of Midwifery.
[7] Landis, Management of Labor.
[8] Lusk, Sci. and Art of Midwifery.
[9] Smith, Lectures on Obstetrics.
[10] Verrier, Partridge, Manual of Obstetrics.
[11] Collins, A Pract. Treat. on Midwifery.
[12] Parvin, Sci. and Art of Obstetrics.
[13] Charpentier, Pract. Treat. on Obstetrics.
[14] Dewees, System of Midwifery, p. 188, ed. 1828.

duties toward the child," mentions the suspension method as follows: "By placing the child's mouth downward, and holding the body and hips higher than the head; at the same time gently shaking the child, so as to disengage any mucus that may be lodged in the trachea, and permitting it to flow from the mouth, by making this the depending part, . . . renew the inflations and the suspensions alternately, until the mucus flow from the mouth. By proceeding in this manner I have often had the satisfaction of seeing the child restored under very discouraging circumstances. . . . This operation should never be neglected, nor should it be too soon relinquished." Byford[1] suggests . . . "the head should be placed downward, much below the level of the hips and feet, and the body exposed to as high a temperature before the fire or stove as can be commanded at the time." Hodge,[2] and Cazeaux, and Tarnier[3] quote Dewees. Barnes[4] mentions Howard's[5] method as follows: "The child is held on its back in the operator's left arm, the head hanging down a little; this attitude opens the larynx; then with the right hand the chest-walls and abdomen are alternately compressed and relaxed twelve to sixteen times in the minute." Sims[6] very graphically describes a case of chloroform narcosis, occurring when he was operating at St. Germain, on December 19, 1861, resuscitated by Nélaton, by suspending the patient head down, with the feet over the shoulders of an assistant. Here the suspension was continued for twenty minutes, and had to be repeated three times before it was entirely successful. Nélaton had employed this means of resuscitation as far back as 1857. Chisolm[7] also records his experience in such cases, and I myself have employed it with success in three instances. In the employment of this method in asphyxiated cases, it is well to remember that in asphyxia neonati livida, or the condition almost approaching apoplexy, the cord must be allowed to bleed a little while in suspending

[1] Byford, Theory and Pract. of Obstetrics, p. 241.
[2] Hodge, System of Obstetrics.
[3] Cazeaux and Tarnier, Theory and Pract. of Obstetrics.
[4] Barnes, System of Obstetric Medicine and Surgery, p. 484.
[5] Howard, B., Lancet, London, vol. i. p. 750.
[6] Sims, J. M., The Story of My Life, p. 321.
[7] Chisolm, The Medical Record, N. Y., vol. 33, p. 63.

the child, and in those cases of asphyxia neonati pallida no such bleeding will be necessary, but rather contraindicated. The following are among the cases in which I have employed this method.

CASE I.—L. M., white, aged twenty-five years, born in New York, was delivered of her second child on January 26, 1888. Labor pains set in at three o'clock on the morning of January 25th, with the head presenting. The first stage was very tedious. At ten o'clock at night, when I was first called, examination showed impaction of the head with rupture of the membranes. As both the patient and her husband strenuously opposed the application of the forceps, she was allowed to continue her ineffectual labor until nine in the morning, when I determined either to deliver instrumentally or withdraw from the case. Finally, after much persuasion, they consented to their application. Summoning Dr. John Walter, who administered the anesthetic—the alcohol-chloroform-ether mixture—I applied the instruments, and we succeeded in delivering her of a male child, very much cyanosed. Before the delivery was completed cold water was dashed upon the child's head, but without effect. As the cord was encircled about the neck, it was cut and ligatured as soon as the head was delivered; with much difficulty the remaining portions of the body were delivered. Dr. Walter now pressed firmly upon the uterus; the hemorrhage was considerable; hour-glass contraction followed, and the placenta had to be extracted by introducing the hand. To return to the child. The flow of a few drops of blood, spanking, cold water dashed into the face, failed to relieve its asphyxiated condition. No efforts at respiration were excited; no pulse could be detected. The child was now taken by the feet and held suspended for twenty minutes, during which time dirty, sanguinolent mucus flowed from the mouth. At the expiration of this time the child was breathing naturally, and it was given to the nurse to wash and dress. It suffered for a few days from ophthalmia neonati, and is now alive.

CASE II.—L., white, aged thirty-six years, born in District of Columbia, multipara, experienced the first pains of labor during Saturday night, June 8th; during Sunday she was free from pain; on Monday, at two o'clock in the evening, they returned, but were few and at long intervals; at ten o'clock that night the os was dilating, the bag of waters was forming, and the head presenting. Owing to the severity of the pains she was given the alcohol-chloroform-ether mixture, which she administered herself. At three o'clock in the morning, I decided upon instrumental delivery, and to this end summoned Dr. R. S. Hill. After administering a sufficient quantity of the mixture to induce anesthesia, I applied the forceps, but with great difficulty and after much perseverance. Applying traction, they slipped; applying them a second time, I was successful in delivering her of a male child. The head was arrested at the vulva, and for some time resisted traction with the hands applied under the jaws and at the back of the head. The placenta was resting upon the anterior aspect of the thighs, the cord passed

between the legs, up the back, and around the neck, down the back and between the thighs to the umbilicus. The pressure around the neck was so great that I could not tell, on account of the cyanosis, where the hair ended and the face commenced; there was no pulsation to be felt in the cord, no cry, no indication of life. As quickly as delivery could be completed the cord was ligatured. Dr. Hill now took charge of the mother, administered a teaspoonful of the fluid extract of ergot, extracted the placenta by Crédé's method, and applied continuous pressure over the uterus. There was considerable hemorrhage, but it was soon controlled by these measures. Immediately after the cord was ligatured I took charge of the baby and held it suspended by the feet; this was more a forlorn hope than anything else. A gasp, such as is seen in the dying, was the only response, while dirty mucus ran from the mouth. The suspension was continued, and soon this gasp was followed by another, and then another, until the child cried, and showed that our efforts were successful. The suspension continued ten minutes. The nurse then took charge of the baby, and washed and dressed it. It showed no effects of the asphyxia, and is to this day a strong, healthy child.

Since writing the above, I find Dr. C. W. Spicer[1] records his successful experience with this method, but he also employed artificial respiration at the same time. In my cases, I discard artificial respiration and employ suspension alone.

[1] Spicer, C. W., Med. and Surg. Reporter, vol. 36, p. 477.

REPORT OF SIXTY-THREE CASES OF ALEXANDER'S OPERATION.

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BATTLE CREEK, MICHIGAN.

I have performed the operation of shortening the round ligaments sixty-three times. The operation was performed for the relief of retroversion or retroflexion with prolapse of one or both ovaries, in fifty-five cases; for procidentia, in four cases; prolapse of ovaries, three cases; complete anteversion, one case. Leaving out sixteen cases which have been operated upon within the last six months, the results are as follows: Complete success in thirty-four cases; decided improvement in eight cases; failure in five cases. Of the sixteen cases operated upon within six months, all except two promise complete recovery as the result of the operation. The result is uncertain in two cases. By entire success, I mean not only anatomical success in restoration of the uterus to normal position, but relief of the patient from the various symptoms accompanying the pathological state for the cure of which the operation was performed.

My results show 72⅓ per cent. of the whole number operated upon to be cured, 17 per cent. improved, and 10⅔ per cent. failures. It is just to the operation that I should state that nearly all of the failures were comprised within my first ten cases, and that the percentage of recoveries in my last forty cases is considerably larger than in the first twenty. It should be further stated, that two of the five cases of failure were cases of complete procidentia of many years' standing, and each required colporrhaphy, which the patients declined, feeling so greatly improved from the operation of shortening the ligaments that they insisted that further operation was unnecessary.

I would like to call special attention to the mode of operation which I have employed in my last thirty-five cases. Instead of cutting down upon the external ring, as first practised by Dr. Alexander, which method I employed in the first twenty-eight of my cases, I have adopted Dr. Alexander's later suggestion in opening the canal at a point above the external ring. My practice is to make a short incision, rarely an inch in length, parallel with Poupart's ligament and at such a point as to enable me to open the canal by division of the intercolumnar fascia at a point about one inch below the internal ring. In dividing the intercolumnar fascia it is necessary to make only a slight puncture with the end of the scalpel. I then make the wound gape with a strabismus hook and, introducing another hook, draw out the round ligament. The ligament is at this point easily found and enucleated from its investing fascia. I draw out both ligaments as far as possible, and secure in the usual manner with a silver wire and carbolized silk sutures. The slit in the intercolumnar fascia is carefully closed by two or three silk sutures. The layers of fascia divided in the operation are carefully approximated by a continuous suture of fine catgut, the skin closed in the same manner, and the wound dressed antiseptically.

The advantages of this over the older method are:

First. The ligaments are easily secured. One who operates by this method will never report cases in which the ligaments are absent, or in which they are adherent to the borders of the internal ring and cannot be drawn down.

Second. The ligaments are sufficiently large at the point at which they are secured to enable the operator to draw them down without great risk of breakage.

Third. When well drawn down, the silver wire and silk sutures may be passed through the ligament at a point at which its size is sufficient to give the sutures a firm hold upon it.

Fourth. The danger of hernia following the operation is wholly obviated. In my first twenty-eight cases, slight hernia occurred on one side in four cases, or fourteen per cent. of the entire number. In my last thirty-five cases, operated upon by the new method, hernia has not occurred in a single case.

Fifth. This method involves so little bruising or laceration

of tissues that it is never necessary to cut off the distal end of the ligament, and immediate union can be secured in nearly every case. In my last thirty-three cases, I have had immediate union in every case but one; in this case the patient was unruly and disarranged the dressing, as a result of which there was slight suppuration of both wounds; this did not, however, prevent a perfect result. By this method, the general disturbance is so slight that in thirteen out of the thirty-three cases the temperature of the patient was at no time so much as one degree above normal; and in only two of the cases, besides the one in which suppuration occurred, did the temperature reach 101°. Of these two cases, the elevation of temperature in one was due to an epileptic seizure, in the other to malaria; immediate union occurred in both cases.

Sixth. The operation by this method can be done so quickly and with so little inconvenience to the patient that ether or chloroform is seldom required. In my last thirty-three cases I have used ether in only six cases, and in these cases it was employed only on account of the timidity of the patient. Cocaine answers all the purposes required of an anesthetic. I usually employ from half a drachm to a drachm of an eight per cent. solution of cocaine. Patients rarely complain of pain except momentarily just as the ligaments are drawn out to the fullest extent. I consider the dispensing with ether a very great advantage, as it obviates the retching and vomiting subsequent to the operation, which is not only a source of great distress to the patient, through traction upon the wound, but is also, I think, prejudicial to firm union of the ligaments in their new position.

From my experience with this operation, I regard it as fully as useful through its ability to restore displaced ovaries to their normal position as in the cure of displacements of the uterus. Ovaries which are enlarged as well as displaced, rapidly diminish in size and lose their irritability after the operation, and in the great majority of cases are completely restored to their normal position.

I would like to mention in this connection an interesting observation respecting the structure of the round ligaments. I have tested the ligaments by the application of electricity in

a number of cases, and in several instances have observed the contractility characteristic of voluntary muscle. In one case a portion of the distal end of a ligament, when cut off and placed under the microscope, showed numerous fasciculi of voluntary muscular fibres. In cases in which the ligament responded to electrical stimulus, I noticed that the ligaments contracted vigorously whenever the abdominal muscles were stimulated, and when the current was not applied to the ligaments themselves. This observation has led me to the conclusion, that an important function of the round ligament may be to antagonize the displacing influence of vigorous contractions of the abdominal muscles in forcing the uterus downward and backward, by tilting the fundus of the organ forward at the moment of the contraction of the abdominal muscles.

In the great majority of cases I have found the round ligaments non-contractile, evidently the result of degeneration of their muscular fibres through long disuse. This fact would seem to show the utter hopelessness, in such cases, at least, of securing contraction of the ligaments and restoration of the uterus to normal position by the employment of electricity, massage, or special exercises; and, to my mind, also emphasizes the importance of physical culture, particularly the development of the abdominal muscles, as a preventive of uterine displacements; and points, likewise, to the neglect of development of the round ligaments through exercise as, probably, one of the most common causes of uterine displacements, particularly in women who have not borne children.

My chief purpose in offering this brief paper has been to ascertain the status of Alexander's operation in the minds of the distinguished members of this Association, and to present the advantages of an improved method of operation.

FIBROID TUMORS OF THE ABDOMINAL WALL.

By CHARLES A. L. REED, M.D.,
CINCINNATI.

The dearth of American and English literature on tumors of the abdominal wall induced your essayist to announce the general subject as the title of this paper. The data once accumulated, however, it became apparent that to dispose of the entire topic it would be necessary to discuss: (*a*) fibromata, (*b*) lipomata, (*c*) myxo-lipomata, (*d*) cysto-carcinomata, (*e*) neuromata, and (*f*) hydatid cysts. A discussion of these various subtopics, however cursory, would result in the production of an essay too voluminous for presentation under your rules. As a consequence, and in consideration of the fact that my own observations have been limited to five cases of tumor of the abdominal wall—all of them fibroids—I have deemed it expedient to restrict my essay to a discussion of that variety. And as my cases happen to form an interesting series, illustrating some of the different methods of treatment, I shall present them in that connection. I deem it necessary, however, to preface the report proper with a more or less general discussion of fibroids of the abdominal wall, particularly as the matter is comparatively new to our national literature. In this connection I have availed myself liberally of the valuable work by Labbe and Remy, *Traité des Fibromas de la Paroi Abdominale*, published this year in Paris. It is but fair, however, to these distinguished authors to say that I have not in any sense attempted a translation of this valuable treatise, but that I have taken the perhaps unwarranted liberty of accepting only such of their views as accord with my own, of omitting such matters as I deemed irrelevant to my present purpose, and of

adding my own convictions on topics on which they are silent.

The *history* of neoplasms of the abdominal wall is of comparatively recent origin. Lisfranc, in 1837, was the first to write on the subject. Dewalf wrote on the same subject in 1839. Boulenger, however, was the first to write on the classified topic of fibroid tumors of the hypogastric region, which he did in 1842. It was not, however, until after 1850 that the literature of the subject began to take shape, and then the contributions came almost exclusively from the French school. Sappey, in 1850, recorded a casé of fibrous (fibroplastique) tumor, which he successfully removed from the region of the umbilicus; Limange followed quickly with the report of another successful case. Langenbeck was the first to record a fatal case. The growth impinged upon the peritoneum, a part of which was removed in the act of extirpating, the patient dying on the fourth day of peritonitis. The first two of these cases—*i. e.*, Sappey's and Limange's—were supposed to be cancerous, but Langenbeck recognized the benign character of the tumor. From this time on the growth became a recognized one in pathology, and its extirpation was practised in France, Germany, and England.

It was not, however, until after 1860 that material had so far accumulated as to permit of systematic study of the subject. Huguier was the first to undertake the task. He emphasized the fact that these tumors were of the fibromas; that they were benign; and that they frequently so impinged upon the peritoneum as to imperil that membrane in operation. He, however, fell into the error of teaching that these tumors spring from some bone, generally of the pelvis, to which they were attached by a pedicle. Huguier's experience, from which he drew these conclusions, was based upon six cases. In one case he attempted extirpation, got out some pieces, closed up the incision, and the patient recovered; in one he did extirpation with recovery; in three he did nothing; while in the last case of his series he tied the "pedicle" subcutaneously, which caused the tumor to shrink, but not to disappear. Nélaton apparently accepted Huguier's doctrine of an osseous origin of these tumors, and consequently taught that they had

pedicles. He recommended extirpation as the only way to recovery. From this time on reports have come from both sides of the Atlantic. Thomas, in 1879, and Hanks, in 1880, were, I believe, the first American surgeons to record cases; the report of Thomas being of particular value, as he illustrated certain refinements of technique, which, if observed, are calculated to diminish the mortality from extirpation.

The *etiology* of fibroid tumors of the abdominal wall is somewhat obscure. To begin with, the tumors are rare; Nélaton, in twenty-six years' experience, saw only fifteen or twenty of these tumors; Labbé, in twenty years, has met with but ten; while Billroth, in twenty-three years, in hospital and private practice at both Zurich and Vienna, saw but thirty-one tumors of all sorts of the abdominal wall. Of these, he operated upon fourteen cases of fibromas, with twelve recoveries and two deaths. If I may be pardoned for interpolating my own observations in this connection, I may say that I have seen but five of these cases in fourteen years of practice.

The *cause* of so rare a condition can be arrived at, but with difficulty. It is unsatisfactory to apply the general causes of neoplasms without having their applicability illustrated in observed and recorded cases. Thus, there have been no observations establishing the fact that either heredity or individual predispositions figure as an etiological factor. The majority of cases have been among women. The period of sexual activity is one of special liability. These facts suggest a causal relationship between childbearing and these tumors. Volkmann advanced the theory of traumatism as a cause, and cited illustrative incidents of these neoplasms developing consequent upon injuries, inflammations, and spontaneous rupture of the muscles. Labbe and Remy met eight cases in which these tumors followed external violence. Two of my own cases could be attributed to the same cause. These facts tend to confirm the etiological significance of childbearing, for the abdominal distention incident to pregnancy, and the muscular violence due to parturition develop nutrient disturbances favorable to the growth of these tumors. Spontaneous rupture of the recti muscles from expulsive efforts at parturition are reported by Chaussier and Lachapelle. Virchow observed four

or five cases of rupture of the recti abdominales from muscular contraction.

The *pathological anatomy* of these tumors is of interest from both a diagnostic and surgical standpoint. Fibrous tumors of the abdominal wall are generally single, but few of the recorded cases being double. They generally occupy an antero-lateral position. Their anatomical layers are determined with difficulty, because of the displacement of the various layers of the wall from the progressive development of the tumor. They are always found beneath the subcutaneous cellular tissue and the superficial fascia, and generally beneath the aponeurosis of the external oblique. It is often so adherent to the muscular structures, with which it is in immediate relation, that even on section the identity of the two cannot be easily distinguished. This is not always true, for there are cases in which the tumor is lighter in color, and firmer in texture than the adherent muscles. On the deeper side the fibroma is often in relation with and adherent to the peritoneum—a serious fact when extirpation is undertaken. In size they vary from five to thirty centimetres in diameter. When small they are smooth and round, ovoid, or pyriform; but when they grow larger they, in rare instances, become lobulated. They have no true pedicle, although, in some cases, there are neck-like elongations of the tumor very suggestive of a pedicle. In 1876 Péan operated upon a case in which the tumor was adherent to one of the pelvic bones, and the next year Bond, of Lyons, had a similar case; but the circumstances were subsequently explained by the continuity of the tumor tissue with the investing aponeurosis. Labbe found no pedicle in six operations. In one case I found an apparent pedicle, which seemed to be attached to the pubis, but after removing the body of the tumor I enucleated the pedicle, and found that, as a matter of fact, it had no connection with the bone. These tumors are sometimes encapsulated. When small they are not vascular, but when large the vessels increase in size until, as Labbe affirms, some of the veins are as large as the little finger.

In *structure* these tumors are homogeneous, being composed only of the elements of fibrous tissue in various degrees of evolution. The fibers are either broad or straight, rectilinear

or undulating; while the cells are of both the round and fusiform varieties.

The *symptoms* of these tumors are almost exclusively objective. Labbe and Reamy speak of these tumors as suggesting, when small, a deposit of indurated cicatricial tissue following an abscess. When small they are thoroughly imbedded in the walls, but when large they become pendant. The protrusion from the muscles may be in the direction of either the integument or the peritoneum. Mobility is an important symptom. When small these tumors appear to be quite firmly fixed, but when large they become more mobile. If they are deeply seated, the skin, fat, and fascia can be readily moved over them, but when situated near the outer surface this mobility of the superficial tissues becomes limited through adhesions. When deeply seated, the tumor, if deeply and firmly grasped, can be freely moved over a limited area, but this mobility becomes either lessened or lost when the abdominal muscles are put in a state of tension. On deep palpation a narrowing of the growth, suggestive of a pedicle, will frequently be felt extending in the direction of either the pubes or the crest of the ilium. The tumor is uniformly lateral in position. In shape it may be ovoid or pyriform, flat or round, elongated or cylindrical. Except in rare instances, in which the growth is very large, it will be found uniformly unilobular. The external projection increases or diminishes with the contraction or relaxation of the parietes.

The *development* of these tumors is divisible into two periods, the first characterized by indolence, the second by activity of growth. The first period may be of indefinite duration, and be characterized by a completely stationary development of the tumor; but the second is characterized by rapid multiplication of all elements within the growth. So rapid may be the growth of the tumor in this second period as to be suggestive of malignancy. It is, indeed, an interesting question to determine whether or not there does not occur in some of these cases a malignant degeneration. Instances are not wanting in which a malignant character is developed in tumors occurring in other localities, and which had previously been quite indolent and apparently benign; and hence the inference

becomes rational that cancerous tumors of the abdominal wall may have had a benign origin.

The *influence* of *pregnancy* on the nutrition of these growths is very pronounced. Thus, Broca records a case which had been previously indolent, but which attained a diameter of thirty-one centimetres during one pregnancy. Thomas, Labbe, Hanks, and others have made similar observations; while Lartesson, Péan, and Brun have observed cases in which rapid development followed accouchement. My only observation on this point is strangely at variance with what appears to be the rule. Case I. of my list experienced almost complete subsidence of the tumor during pregnancy; but it should be remembered that she had been subjected to an exploratory incision, following which the tumor began to grow smaller, and that absorption was well advanced prior to conception.

The *duration* of this affection is variable. There are no recorded cases of the spontaneous disappearance of one of these fibroids. Thomas recorded a case in which the mass reached a diameter of twenty-two centimetres in the short space of four months, while Langenbeck and Limange each reported a case of fourteen years' standing, the former attaining the size of an adult head, the latter the size of a large orange.

The *prognosis* is favorable as the affection is benign. In cases which have been standing for a long time, and in which the tumor is large and deep-seated, the chief trouble experienced is of weight and mechanical inconvenience. Among women who have to work, abrasion of the unequal surface often occurs as a result of friction. The misery in these cases is extreme, and makes a strong appeal to the humanity of the surgical art. The strong probability of malignant degeneration should be kept in mind. It cannot be denied, however, that in cases of large and deep-seated tumors the chief danger is on the side of extirpation, particularly when it is remembered that, as yet, we have no recorded cases in which these growths have figured as a primary cause of death. A patient's right to choose between the suffering from one of these tumors and the dangers of extirpation cannot be denied. When the

tumors are small, their extirpation should always be advised, for, at that period, the operation is practically innocuous.

The *diagnosis* of fibroid tumors of the abdominal wall is not always easy. There are numerous other conditions of the parietes with which they may be confused. Able surgeons have been unable to differentiate between these tumors and other conditions prior to operation. *Hematoma* may present some of the physical characteristics of fibroid, but the suddenness with which it appears, attaining its full size almost at once, following the receipt of an injury, is sufficient to establish the difference. *Lipomas*, particularly of the deep variety, may be mistaken for fibroids, and it may be impossible, as it is unimportant, to establish the difference before section. *Malignant tumors* are frequently just ground for confusion, and this confusion is increased by the extreme rapidity with which the benign neoplasm occasionally develops. As a rule, however, malignant growths of whatever variety are lobulated, while fibroids are almost uniformly smooth, and of a spherical or pyriform shape. Malignant growths, too, are generally rapid in development from their very inception, while fibroids, if of rapid growth at all, are generally preceded by a period of indolence. *Tertiary syphilis* may be mistaken for fibroids in the early stage of development. The essential differences are: In the former there is an antecedent specific history; the indurations correspond to the distribution of the lymphatics; and the nodules are multiple and painful; in the latter the antecedent history may be free from specificity; the nodules occur in the muscles rather than in the lymphatics; and they are single and painless. *Neuromata* are such anomalous neoplasms in this locality that they may be left out of consideration. They are, however, generally multiple and extremely sensitive, while the fibroids are single and painless. *Hydatid cysts* differ from fibroids in several important characteristics. They are liable to occur in the posterior wall; they develop rapidly; they yield a wave of interrupted fluctuation on percussion; and when deeply and firmly grasped by the hand they furnish the characteristic "hydatid thrill." Fibroids, on the contrary, occur almost uniformly on the anterior wall, are of slow growth, do not fluc-

tuate on percussion, and are free from friction resonance on deep compression.

Solid tumors of the anterior abdominal wall may be confused with several intra-abdominal neoplasms. *Cyst of the ovary* was thought to exist in a case in which, on operation, an intra-parietal fibroid was found by Rokitansky in 1880; and the same error was made by Weinlechner in 1883. Cysts of the ovary are generally of relatively rapid growth, are generally fluctuating, and are almost invariably associated with emaciation; fibroids are generally of relatively indolent growth, do not fluctuate, and seldom impair the general nutrition. *Uterine myomata* generally occasion hemorrhage, uterine pains, and general intra-pelvic distress; they are ordinarily multinodular, and are situated in the median line; fibroids of the abdominal wall do not occasion uterine hemorrhage, give rise to no cramps, provoke no intra-pelvic discomfort, and are ordinarily situated to one or the other side of the median line. *Cyst of the mesentery* is but an occasional condition, but it is one which I once saw a no less distinguished operator than Mr. Lawson Tait mistake for a tumor of the abdominal wall. The points of differentiation are that the mesenteric tumor is generally deeply seated, enabling one to lift the abdominal wall clearly away from it; and then, too, it is generally very painful —conditions which do not obtain in fibroid of the wall. *Enlargement of the spleen* is sometimes very suggestive of an extra-parietal neoplasm. I saw a recent case of this kind in the service of my friend, Dr. Wenning, at the St. Mary's Hospital. The spleen is, however, always much more movable than the tumor, always lies on the left side, and can be distinguished from anything else by the presence of the "splenic notch," which can generally be made out on palpation.

The diagnosis of adhesion to the peritoneum is important. In the earlier stages the relations of the growth may be determined with approximate accuracy, but when the tumor grows larger its deeper relations cannot be easily foretold. Manifestly, however, the increase in the size of the tumor increases the probability of adhesions to the peritoneum. In this connection it is interesting to note the size of the tumors in cases in which adhesion to the peritoneum was extensive. In Lan-

genbeck's case the tumor was as large as an infant's head. Esmarch's and Sklefossovski's cases were each the size of a man's head; Rokitansky's weighed 34 livres, and Weinlechner's 8400 grammes, while Labbe's case measured 45 centimetres in diameter. In one of my own cases the tumor was 34 centimetres in longitudinal diameter. As a rule, however, the fact of intimate peritoneal adhesion cannot be made short of exploratory incision.

The *treatment* of fibroids of the abdominal wall has gone through various stages of evolution. The cautery to the surface was at one time used, but happily abandoned; deep injections and setons were employed as conservative measures. Section and subcutaneous ligature of the pedicle were in vogue by certain operators, when it was presumed that the tumor received its nourishment through its supposed pedicle. Incomplete extirpation was practised in a few cases until latterly under the teachings of Péan, Terillon, and Labbe. Total extirpation is the one expression which summarizes the treatment.

I beg leave to present the subject of treatment under three heads, viz.:

Exploratory incision.
Total extirpation.
Electrolysis.

It may sound odd to speak of exploratory incision as a means of treatment, when, as a matter of fact, it is undertaken for the purpose of determining the expediency of total extirpation. My object, however, in giving it the prominence which I do in my classification is to emphasize its importance, both as a step preliminary to radical surgical interference and as a procedure of curative value within itself. The operation of extirpation ought never to be undertaken, excepting in the light obtained by an exploratory incision, for the reason that, in cases of extensive peritoneal adhesion, the minimum of risk to the patient is on the side of desistance. Thus, eighty-six recorded cases furnished seven deaths from peritonitis alone; while the completed operation in the hands of so distinguished an operator as Billroth has yielded a mortality of 12.5 per cent. But, on the other hand, beneficial results have followed the employ-

ment of exploratory incision alone. This has been confirmed in the hands of Esmarch and Laroyenne, and by the following:

CASE I.—Mrs. M., aged thirty-three, was referred to me in May, 1885. She had a large tumor, occupying the left anterior wall of the abdomen, and extending from immediately above Poupart's ligament and the crest of the ilium to a point four centimetres above the level of the umbilicus. It was somewhat multinodular and but slightly movable. The woman was very fat, so that what seemed to be the entire wall could be lifted away from the tumor. This gave rise, temporarily, to the impression that the tumor was a uterine myoma, but the mobility of the womb and the situation of the mass demonstrated the fact that it did not spring from that organ. The attitude of the patient did not appear to affect the mobility of the tumor.

No fact of an etiological significance could be gleaned, except that she had borne four children in rapid succession, and that she once fell from a chair and hurt herself on that side; the accident occurring about two years before she noticed the growth.

I operated upon her May 25th; Drs. Dickey, Corson, and Bundy, of Middletown, Ohio, present and assisting. A linear incision was made over the entire length of the tumor. The dissection was carried through an enormous layer of fat, through the superficial fascia, and through muscular tissue which could not be identified, until the mass was reached. The dissection was then carried laterally on the surface of the mass quite two inches either way, demonstrating the almost continuity of the mass with the muscular tissue. A deep dissection was then carefully made at both the upper and lower extremities of the tumor until the peritoneum was reached, and found intimately adherent to the mass. An effort to separate it gently by the index finger resulted in entering the peritoneal cavity. It now became apparent that to remove the tumor would require the removal, not only of a large ellipsis of superficial tissue, which was unimportant, but the resection of an area of peritoneum coextensive with the under surface of the tumor. The operation was abandoned; the superficial incision being carefully closed. The wound healed without trouble, save that from the obesity of the patient the tension became so great after the removal of the stitches that the wound gaped—a trifling circumstance.

Three months later I was informed by Dr. Dickey that the growth was growing smaller. I lost track of the case, until March, 1887, when I was informed that a few weeks previously my patient had been delivered of a child at term. The interesting information was volunteered that as soon as she became pregnant the growth began to subside much more rapidly than before, and that at the time of her *accouchement* it had practically disappeared. She is now quite well.

This case is of interest in several particulars: First, it was a very large tumor; next, exploratory incision was of importance in demonstrating its immovability; third, the disturbance of

nutrition by the dissections, which were quite extensive over the anterior surface, established absorption; and, fourth, pregnancy hastened rather than retarded the disappearance of the tumor. This, with the experience of Esmarch and Laroyenne, ought, at least, to attract attention to the curative possibilities of exploratory section.

Total extirpation has been the rule of practice with surgeons who have been so unfortunate as to encounter these cases. Elsewhere, in this essay, I have drawn attention to the conditions under which I deem extirpation advisable. It may be well for me to state myself more explicitly.

I would advise extirpation in all cases in which the tumor is small, although at the time it may be painless, and occasion no mechanical inconvenience. My reason for advising operation under these circumstances is twofold, viz., first, the operation at this stage is not dangerous; and, next, the tumor, however indolent, will, if left alone, become active, and, in all probability, develop complications which will render extirpation hazardous. This latter proposition is proven by my first observation in this class of cases.

Case II.—Mrs. D., aged thirty-four, was referred to me, in 1879, by Dr. Harris, of Piasa, Illinois. I then found a tumor the size of a small orange in the right abdominal wall. It was slightly movable, but would become locked when the muscles were put in a state of tension. The skin and fat could be readily moved over the surface of the tumor. These facts showed that it was deeply seated. I advised extirpation at once, but the advice was declined on the plea that the tumor gave her no inconvenience, and that she would let it go until it did.

I saw the case again in August 1888. The tumor had remained dormant for seven years after I first saw it, when it suddenly began to grow. At the time of my last interview it was fully nine inches in diameter and evidently deeply seated. It, however, occasioned marked anterior projection, and the prominent surface was constantly in a state of irritation from the clothing.

Extirpation of the tumor would certainly be fraught with danger. I advised electrolytic treatment, but unfortunately the patient is so situated that she cannot avail herself of the advice. If, however, she had submitted to the operation when I advised it nine years ago, she would, in all probability, have fared as did the following:

CASE III.—Miss M., aged nineteen, came to me in 1882, complaining of a growth on her belly. I found a tumor five centimetres in diameter, lying a little above and to the right of the navel. It was not easily movable, and its mobility became restricted when the patient had the wall in a state of tension, as for instance, in the act of arising from her back. The position of the growth was such as to give rise to some irritation from the clothing, and thus the patient experienced considerable inconvenience.

The history of the case indicated a progressive development for about three years, and that she had injured herself at the site of the tumor by falling on a chair quite a year before the growth began to develop.

Operation. May 4, 1882.—Dr. Strecker, of Hamilton, Ohio, assistant. A linear incision from above downward was made over the surface of the tumor, the dissection being carried quite beneath the rectus muscle before the tumor was encountered. Adjacent fibrous and aponeurotic structures appeared to be almost continuous with the neoplasm. Enucleation was effected with care. The wound was treated antiseptically, and tightly closed by interrupted sutures. A firm compress of antiseptic cotton was applied under the adhesive strap to secure coaptation of the denuded surfaces. The patient made an uninterrupted recovery.

One would say at a glance that the operation here indicated is not a serious one, and I am not aware that the mortality list of reported cases of extirpation contains a fatality from among the instances in which the operation was done thus early. The same, however, cannot be said of cases of which the following may be said to be an index:

CASE IV.—Mrs. L., aged twenty-five, the mother of two children, was referred to me by Dr. W. F. Taylor, of Cincinnati. She had a large tumor on the right side of the abdomen. The growth was twenty-three centimetres in length by thirteen in breadth. It was pyriform in shape, with the little end downward toward the pubis; it was firm in consistency, and but slightly movable. The mobility of the tumor was not affected by the attitude of the patient. There was a large deposit of fat on the abdomen, so that the wall appeared to be distinct from the tumor.

The previous history of the case afforded no clew to the cause of the malady.

Operation. March 30, 1888. At St. Mary's Hospital; Drs. Wening and Jones assisting, and Drs. W. F. and W. H. Taylor, and Carson present. An incision was made the full length of the tumor. The rectus and part of the transversalis muscles were divided before the tumor was reached. The fibers of the muscles were observed to blend intimately with the tissues of the tumor. Dissections were carried laterally to some considerable extent. The mass was now separated from the underlying tissues beginning from above. Although great care was taken not to injure the peritoneum, that membrane was unavoidably ruptured. At this inopportune moment the

patient began to vomit, and the straining caused the intestines to protrude. In a moment, however, they were replaced, when the enucleation was proceeded with. This was done with extreme difficulty. Near the lower portion of the tumor the mass narrowed into what seemed to be a pedicle. A provisional ligature was placed around this, and the tumor divided above. It now became apparent, however, that the pedicle was not the avenue of important vessels. It was, therefore, liberated from the ligature and enucleated. The enucleation showed that it was not attached to the symphysis as at first seemed, but that it was adherent to the aponeurotic tissues. The internal layer of the abdominal wall was now closed by a continuous catgut suture, after the abdominal cavity had first been thoroughly cleansed. The now vacated nest of the tumor was carefully cleaned. The external layer was then closed by interrupted silk sutures; a small drainage tube being left in. Antiseptic details were duly observed. The operation was concluded about 11 A.M.

6 P.M. Patient resting quietly, pulse 80, temperature 99°; some vomiting; no particular tenderness over the abdomen.

31*st*. 6 A.M., pulse 130, temperature 104°. Abdominal pain with some tympanites; vomiting aggravated. Ordered Epsom salts, to be followed in three hours by enema of glycerine; ice-bag.

6 P.M., pulse 120, temperature 102°; vomiting had ceased, and patient resting more quietly. Tympanites not materially diminished, although the salts had operated twice. Ice-bag continued. As patient was much exhausted, brandy and water was ordered.

April 1. 6 A.M., pulse 145, temperature 104.2°. Prostration extreme; tympanites inordinate; patient semicomatose; hypodermics of whiskey and slight doses of atropia temporarily improved her.

10.30 A.M., died. No autopsy was allowed.

In this case it is difficult to say just why she had peritonitis. The injury to the peritoneum incident to the operation was far less than I have frequently inflicted in other operations. The antiseptic precautions were everything that could be desired. Moreover, it would appear that the conduct of my case was quite in harmony with that of other recorded cases of fatal peritonitis following this operation. In Langenbeck's case he tore the peritoneum to the extent of five centimetres; a loop of intestine protruded; he used deep sutures; peritonitis developed the day of the operation, and lasted three days. Langenbeck made a simple incision into the peritoneum, and his patient lasted four days. Esmarch resected three centimetres square of the peritoneum, inflammation developed on the second day, and his patient died the third. Labbe made a rent from eight to ten centimetres long in the peritoneum;

peritonitis sat in the same day, and lasted forty-eight hours. Weinlechner made a very large rent as in ovariotomy; he used both deep and superficial sutures, as I did; peritonitis began the same day, and lasted forty-eight hours. Brun also made a large rent, which it was impossible to close properly by sutures; peritonitis on the second day, and death on the fourth. Boye made but a small opening, peritonitis set in the same day, and death ensued the second thereafter. In all of these cases, so far as the details are reproduced by Labbe and Remy, treatment does not seem to have even phased the course of the inflammation. These views force us to the conclusion that extirpation in large and profound tumors is extremely liable to provoke peritonitis, and that when peritonitis is once developed, it runs a rapid and fatal course.

It was this view that induced me to adopt a different and, I believe, more conservative line of treatment in the following case:

Case V.—Mrs. J. P., aged thirty-two, married five years, sterile, came to me, in May, 1888, complaining of a large tumor in the left side of her abdomen. It had been five years in developing, and was then forty-five centimetres in circumference. Although the anterior protrusion was marked, I felt convinced that the growth was deep-seated for the reason that (1) the anterior walls could be glided easily over the tumor; (2) the tumor itself became less mobile when the muscles were tense; and (3) when the muscles were contracted the anterior protrusion was lessened. The mass itself was more flattened than any tumor which I had previously seen. These various conditions forced me into the conviction that the tumor was situated beneath the muscles, and that its peritoneal attachments were co-extensive with its base.

I advised electrolysis, advice which was accepted the more readily as the patient herself was averse to the radical operation.

I used gold needles with a McIntosh eighteen cell battery; I made the patient's endurance the measure of the current. Treatments administered twice a week were generally by double puncture, *i. e.*, one needle on either side of the tumor, and inserted to a depth of four centimetres. I occasionally inserted one needle and used a flat electrode on the opposite surface.

A diary of the case would be uninteresting, except to show progressive diminution of the tumor. She was away for a while during the heated term, but since the beginning of the treatment she has submitted to electro-puncture thirteen times. The circumference of the tumor has been reduced from forty-five to twenty-eight centimetres. The case is still under observation.

It may be stated, in connection with this case, that no unfavorable symptoms have developed, the patient discharging her household duties during the whole time, except when she was on her vacation. It has not, at any time, been a source of serious concern either to the patient or surgeon. And while it is as yet too soon to speak of final results, the good which has already been realized is a stimulus to perseverance.

The conclusions to which I have been forced by a study of fibroids of the abdominal wall, and by the limited experience which I have adduced, are as follows:

1. Fibroids of the abdominal wall, however small, benign, or indolent, are liable to take on active growth.

2. When small, their anatomical relations are unimportant, and their extirpation can be accomplished without serious risk to the patient, and should be advised.

3. When permitted to grow large, their anatomical relations become very important, and their extirpation can be accomplished, but with hazard to the patient.

4. In cases of large tumor, extirpation should be undertaken only when exploratory incision demonstrates its feasibility.

5. There should be no hesitancy in abandoning an operation when exploratory incision has shown it to be dangerous, because the primary incision of itself may be of benefit to the tumor.

6. In cases of manifestly deep-seated tumors with extensive peritoneal attachments, electro-puncture should be tried before extirpation is undertaken.

SOME MINUTE BUT IMPORTANT DETAILS IN THE MANAGEMENT OF THE CONTINUOUS CURRENT IN GYNECOLOGY.

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The main attraction of the electrical treatment of diseases of the uterus and its appendages is its almost complete immunity from danger. It only possesses this immunity, however, on condition that it is carried out with rigorous antiseptic precautions. I cannot do better than begin by giving a few practical details concerning them.

As several cases have been reported lately of fatal poisoning by bichloride solution, it is important that the solution used for vaginal irrigation should not be too strong; 1 in 5000 should be the utmost limit of strength. Probably a 1 in 40 carbolic solution would be sufficiently effective, and it would certainly be less dangerous. One of the sources of danger with a bichloride solution is the habit of guessing the quantity of the strong liquid. The latter is generally made of such a strength that, when one drachm of it is added to a pint of water, the resulting solution will be a 1 in 1000. But it should always be measured with a graduated glass, kept for the purpose, and it should be thoroughly mixed. After performing the irrigation the vagina should be carefully emptied by depressing the perineum with one finger. Several of my *confrères* depend upon the patient giving herself an antiseptic douche at her own house before coming, they supplying her with tablets for that purpose.

After the application of the current another injection should be given at the office, or, if the speculum has been used, an insufflation of iodoform might take its place.

The uterine sound should be heated in the flame of an alcohol lamp and then plunged into a strong carbolic solution. If Martin's electrode is used, it must be dipped in 1 in 20 carbolic, wiped dry, and anointed with carbolized vaseline.

The glass or rubber insulator deserves attention; it should be carefully washed inside with a fine hair brush, such as is sold by tobacconists for cleansing pipes.

Abdominal Electrode.—As the success of the treatment of fibroids by the galvanic current depends very much on the strength that the patient can be made to bear without pain, and as the pain is generally felt most at the cutaneous pole, it becomes an important question to know what kind of abdominal electrode should be employed. There are three forms, viz.: Apostoli's, Martin's, and Engelmann's.

Apostoli's clay electrode would certainly be the best were it not for certain slight defects, such as the soiling of the patient's skin and clothes, and the difficulty of keeping it warm without letting it get dry. It may be kept moist by surrounding it after every application with a piece of oil-cloth; but it must be warmed, for the application of the cold clay in winter causes a very unpleasant shock. For some time I was in the habit of warming the clay in the oven before applying it, but this was so troublesome that I have substituted for that the placing of a piece of lint wrung out of hot salt water on the abdomen before applying the clay.

Since seeing Martin's electrode at the Congress, last year, I have almost entirely abandoned the clay, and now use Martin's electrode. As the one the instrument-makers provide is a little too expensive for the general practitioner, I have devised a model which only costs about forty cents, instead of four dollars, the price charged by the instrument-makers. It consists of a tin pie-plate with a hole or mouth, through which the liquid is introduced or changed, and a binding-post is attached to one side. A piece of rubber tape is stuck to the lip of the plate all around to insulate it, and a fluted rim is soldered to the back of the lip to which the bladder or parchment is tied and shellacked. Just before the operation I pour out and warm some of the solution, and I moisten the bladder with a little of the same. Dr. Martin, of Chicago, informs me

that he finds the salt water too irritating for most skins, and he therefore fills the electrode with fresh water only, and covers it with a cloth wrung out of warm water. Of course, this increases the resistance greatly. By keeping the electrode in an enamelled dish with a weak bichloride solution, the otherwise unpleasant smell of the animal membrane may be avoided.

The Galvanometer.—What galvanometer is the most reliable? From the testimony of several *confrères* who have used both the American model and the Gaiffe instrument, I believe that the Gaiffe is far superior to any other. In gynecology comparatively high powers are used, and it is best, therefore, to be provided with the one measuring from one to two hundred and fifty milliampères. I would like to point out a few sources of error which should be guarded against. For instance, a strongly magnetized pocket-knife in the pocket will, if one stands near the galvanometer, deflect it to the extent of ten or twenty milliampères; or a pair of silver-plated steel dressing forceps, laid down beside the instrument, may cause the same or even a greater deviation of the needle from its proper reading. If there be any iron in the apartment, such as hot water or steam coils or magnetic machines, the galvanometer must be removed to a considerable distance before it will tell the truth.

It is sometimes very puzzling to know which is the negative and which is the positive pole, especially if you have a complicated Gaiffe collector. If you use a Bailey rheostat, which is much the better instrument for controlling the outflow of current, you will have no difficulty in finding the negative pole by remembering that it is the one attached to the zinc, and by observing to which side the needle turns when the negative wire is attached to a certain side of the galvanometer, and then marking it with a piece of paper for future reference.

The Uterine Electrode.—It is not at all necessary that this be of solid platinum, as Apostoli uses. Provided the negative pole be used, any silver-plated sound will do as well. For negative galvanic punctures a steel needle does just as well as platinum, or even better. One precaution, however, is very necessary, and that is, to have the part which remains at the

level of the vaginal tissue during the *séance* well insulated with hard rubber; otherwise a great deal of avoidable suffering will be caused. It may be objected to this suggestion that it is well to burn a hole in the vagina for the slough to escape from. But this is not necessary; the slough will come away in a liquid form. In cases of stenosis of the internal os, or other conditions of the mucous membrane causing obstruction to the menstrual flow, it would be better to use a series of olivary silver-plated bougies, about from ten to thirty, such as are used so successfully in stricture of the urethra, to which the negative wire should be attached, a current of twenty milliampères for five to ten minutes being allowed to pass. I have here one of Martin's graduated electrodes for applying the positive current to the interior of the uterus in hemorrhagic conditions of the mucous membrane. The surface of platinum in this one is exactly equal to two square centimetres, and requires for chemical cauterization exactly fifty milliampères of current. It is well in all cases to have a movable insulator which can be fixed at will at a predetermined distance, so that you will always know how far from the os the working part of the applicator is.

Apostoli and some of the other leaders in this branch were of the opinion that the rheostat would waste the battery; but this I think is a mistake, for we know that the battery only uses itself up in proportion to the completeness of the external circuit. So that, while it is quite true that a larger number of cells will be required to overcome the resistance, those cells will give out just as large a quantity of electricity during their lifetime as if they were brought into the circuit by means of the current selector used by Apostoli.

Kind of Cells.—After conferring with a large number of users of battery cells, I found that the Leclanché was unanimously conceded to be the best for gynecological work, its great advantage being its almost complete immunity from polarizing. The Law cell, while being an excellent one for telephone work, which is only for a few minutes a day at the most, soon polarizes when kept steadily at work for several hours. There are two forms of Leclanché cell: the old form with a porous pot, and the new patent called the conglomerate,

in which the peroxide of manganese, the depolarizing agent, is pressed into hard cakes, thereby doing away with a porous pot to hold it, and thus diminishing the internal resistance.

The number of cells is no guide to the strength of the current. On fine days, and with everything working well, I have obtained one hundred and seventy milliampères with only ten cells, while during several weeks of rainy weather just previously I could only obtain forty milliampères with the same cells. Again, some tumors conduct much better than others. When the resistance of the patient's skin is very great, it can be diminished very much by getting her to wash her abdomen very thoroughly with soap and hot water, so as to remove the thick and greasy epidermis, and then to apply a little glycerine.

Position of the Electrodes.—The cutaneous electrode is generally called the abdominal electrode, but over a year's experience has forced me to change its name in many cases. I have observed in three cases of fibroid that, after about twenty applications of the current, the portion of the tumor lying between the intra-uterine electrode and the abdominal wall completely disappeared, so that I could feel the sound through the anterior wall of the uterus. In fact, although a large part of the tumor, indeed all the posterior segment of it, still remained, I did not dare to thin the anterior wall of the uterus any more. I then began to place the cutaneous electrode under the patient's bare back as she lay on the sofa, so that then all the current passed through the remaining half of the tumor. It is easy to understand this, for in electrolysis the chemical decomposition only takes place in the tissues through which the current passes, and it always passes by the shortest road between two points. I believe this simple little point may have a very important bearing on the result of the treatment, so that even the largest tumors will be completely absorbed as well as smaller ones. I can illustrate this with a carrot to represent the uterus and this large turnip to imitate the tumor.

With regard to punctures, although I have performed them several times at my office, and sent the patient home half an hour afterward, I have come to the conclusion that this is a very hazardous proceeding, and I shall, therefore, limit the

galvano-puncture to those cases that I am attending in hospital or at their homes. When a puncture is given, I would recommend a hypodermic of cocaine into the vaginal roof at the seat of puncture as a preliminary precaution. For office practice, the intra-uterine applications are very effective and absolutely safe.

After-care of the Patients.—If possible, the applications should be given at the patient's house or at the hospital, so that she can be carried direct to bed and remain there until next morning. If, however, the treatment is given at the office, it is a very necessary precaution to make the patient lie down on a sofa for at least half an hour afterward; and she should be cautioned against doing any hard work until next day. In the only case of pelvic cellulitis which has followed the application of the current by me, the patient, clad in a thin summer dress, went to a picnic the same or the following day and sat for several hours on a cold stone, which may have had something to do with the accident. The only other accidents I have had was the inducing of an abortion in an unsuspected pregnancy, where the diagnosis of chronic metritis had been made for me by a confrère, and where menorrhagia had been present for several months before she came under my care.

Counter-indications.—In cases where cellulitis, or pelvic peritonitis, is known to have existed at any previous time, the continuous current should be given with great hesitation, and only when the acute symptoms have subsided. In all cases we should begin by one or two experimental doses to ascertain whether the patient can bear with impunity a more effective quantity. Ten or fifteen milliampères the first time and thirty the second are as much as would be safe.

HYALINE METAMORPHOSIS OF THE PLACENTA. DEATH OF THE FETUS IN THE FOURTH MONTH, AND DELIVERY OF THE UNBROKEN OVUM AT TERM.

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PATHOLOGICAL DEMONSTRATION.

By WILLIAM H. WELCH, M.D.,
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Examination of Diseased Placenta.—The specimen consists of the placenta with the fetus and umbilical cord attached to it.

The fetus is 12 cm. long. It seems to be well formed. It is not at present in a condition to determine whether or not it was macerated before birth (the specimen has been for some time in Müller's fluid).

The umbilical cord is 23 cm. long. Its vessels appear normal. The cord is attached near the edge of the placenta, where it forms a knot with double insertion.

The membranes are attached along the border of the fetal surface of the placenta. Along one side of the placenta the membranes are reflected toward the umbilical cord, and the amniotic surfaces are adherent to each other. These adhesions can be separated without much difficulty. The chorion and amnion are inseparable.

The placenta forms a thick, firm, oval mass. The placenta measures 11 cm. in length, 8 cm. in width (one end is wider than the other), and 6½ cm. in thickness.

The uterine surface of the placenta presents almost no trace of the normal lobulation. The fetal surface is irregular, presenting depressions and elevations.

Upon section the placenta presents a compact structure, of

firm consistence, with very little of the normal spongy texture. It contains less blood than normal. The prevailing color is gray, but there are many patches of whitish color and of uniform, hyaline appearance. There are several cysts scattered through the substance of the placenta. These cysts contain a thick, gelatinous substance. Their walls are composed of the hyaline material. The largest of these cysts is about a centimetre in diameter, and most of them are much smaller than this. Here and there are dark, reddish-brown streaks and patches of extravasated blood.

The transformation of the placenta into a dense gray and partly hyaline material extends throughout its thickness, but it is most marked in the uterine half.

By teasing, the placental villi are isolated with much greater difficulty than normally. They are most readily isolated in the subchorial region. These villi are irregular, swollen, bulbous, and rarely appear perfect, but are usually broken off.

Upon microscopical section there is found an abundant tissue of hyaline basement-substance, containing cells of various shapes and sizes. Many of these cells are round or oval; these often appear to lie in little spaces like cartilage cells. Other cells are fusiform or branching. Most of the cells contain coarse, fatty granules. There is a considerable infiltration with lime-salts in places. The basement-substance is in some places more or less distinctly fibrillated. In general the tissue is not rich in cells, but there are some accumulations of rather large cells containing fatty molecules.

Bloodvessels are not abundant. Many of them possess hyaline walls. The appearance of many is that of a gradual obliteration of their lumen by the hyaline change in their walls. Brownish patches of pigment exist in a few places. There are many places containing a homogeneous substance. These spaces are not lined with epithelium, but their wall is composed of a nearly homogeneous tissue containing cells in scanty number.

In most places the epithelial covering of the villi is not demonstrable, but in some places it is well preserved, even in several layers. The epithelial cells also occur in narrow rows, compressed between bands of fibrous tissue. These cells are generally fatty.

The change is such as has been described under the names sclerosis of the placenta, interstitial placentitis, and evidently corresponds to some of the varieties of placental syphilis described by Fränkel. In the present case it is not easy to separate the changes in the fetal from those in the maternal portion of the placenta.

It seems, however, probable that the change is primarily in the villi, which become enlarged by a new formation of basement-substance of a hyaline texture and, at least in the later stages, not rich in cells. This hyaline substance is formed in the walls of the bloodvessels in the villi, so that a large number of these vessels are obliterated. The cavernous blood spaces of the placenta are more and more encroached upon by the thickened villi. Finally, there is a coalescence of villi so that over a large extent of tissue there is no longer any trace of villi or of cavernous spaces. No positive clew as to the mode of formation of the cysts can be obtained, but it is probable that they are the result of a mucoid metamorphosis.

As to the nature of the hyaline material, the question arises as to whether or not it is waxy. It becomes of a reddish-brown color by staining in iodine, but is not colored blue by the subsequent addition of sulphuric acid. It is colored deeply by eosine and by picro-carmine. It is probable that it belongs rather to the category of Recklinghausen's hyaline, than to the waxy material.

As to the inflammatory nature of the change nothing positive can be said, and the same is true of many of the processes described under the name of interstitial placentitis.

No positive evidence of the syphilitic nature of the change is obtained from the microscopical examination. A syphilitic osteo-chondritis of the long bones of the fetus does not exist.

The lesions correspond to those described by Neumann, in 1850, under the name of sclerosis of the placenta, and which seem to be, in part at least, identical with changes considered by Fränkel as characteristic of placental syphilis (fetal variety).

Diagnosis: Sclerosis of the placenta, with hyaline metamorphosis.

WILLIAM H. WELCH.

September 10, 1884.

The history of the case is as follows:

June, 1883. The patient, Mrs. M., presented herself at the dispensary of the Woman's College for cough. She stated that she had always been troubled with her throat and lungs; that when eighteen years of age she had been "in consumption" for a year. She was a remarkably tall, well-formed woman, but at the time pale and emaciated. Her skin was, however, remarkably clear, and throughout my acquaintance with the woman she has preserved this peculiar and much-admired complexion—that of a wax-doll. The chest development was good, but the resonance was unsatisfactory. Without anywhere giving absolute flatness, it was uniformly dull. Râles were not found, but the respiration was rude and the expiration pronounced. Dyspnea was marked and the cough was very troublesome. The patient stated that she had been married since January 7th, and that she had menstruated last upon February 16th. Examination showed the uterus half way to the umbilicus, the cervix softened, and pregnancy was diagnosticated in the fourth month.

September. The patient returned improved in general health, but stated that she had not felt life, and that the tumor had diminished in size. Examination showed the uterus low in the pelvis, rather than small, and the cervix less soft.

November. The uterus seemed firmer to the touch, but otherwise the condition was the same. General health remained good.

December 6. The ovum was expelled entire. It had the appearance of a hard, gray mass, four inches long, three inches broad, and two inches thick. It was broader at one end than at the other, having been apparently moulded to the shape of the uterine cavity. At one side of the placenta and as a mere appendage, appeared the fetus, about four inches long, covered by its membranes, which were transparent and easily ruptured. There was a little liquor amnii of a clear amber color. The fetus was not macerated and there was no perceptible odor to the mass. But very little blood was lost during the delivery. A slight fissure of the cervix would account for the whole amount. The woman suffered in no way after the delivery, but would have arisen at once had she been allowed.

Within three months the patient again became pregnant. She did not suffer during this pregnancy, but remained in her usual health and carried the infant to term.

November, 1884. This child was born. The delivery was easy; the child was of good size and well formed. The placenta showed nothing abnormal. A microscopical examination was not made.

March, 1885. The mother was again treated for cough and pulmonary distress. The resonance is now entered as "fair." The expiration is pronounced and low-pitched. The liver-dulness is low, extending to the level of the umbilicus. This was noted upon another occasion also.

September. Abortion was suspected, and the uterus was curetted for an irregular flow.

October. The mother suffered from abscess in the broad ligament, left

side. The baby was at this time eleven months old and had three teeth. The forehead was prominent and there was a suggestion of beading of the ribs. The chest circumference, however, exceeded that of the head by three-quarters of an inch. The child had the appearance of being well nourished, but suffered from constipation and a tendency to nasal and bronchial catarrh. It did not yet walk.

December, 1886. A third child was born. I was not present on this occasion.

December, 1887. I was consulted for this child, then a year old, because it had no teeth and had not yet commenced to walk. The rachitical tendency was somewhat more marked in this child. It was somewhat less active in its movements than the other child had been; but, on the whole, it was well nourished and was a fairly presentable baby. The mother nursed both children.

The mother at this date had, to the superficial observer, the appearance of health, but still retained her dyspnea and occasional cough. She never, during my acquaintance, showed signs of syphilis in either the primary or secondary stage, and no tertiary symptoms other than may be furnished by this history.

The father was a small man, a baker by trade, below his wife in stature, and of a distinctly rachitical build. With a small body he had a wide, protruding forehead, and a large head. I treated him in 1884 for hypertrophic rhinitis. There was no ozena and no other evidences of recent syphilis in the parts. He was somewhat younger than his wife, but the difference was not more than three or four years.

Dr. Welch kindly made his examination in complete ignorance of the history of the case. It will be noted that while Dr. Welch states that the placental lesion is partly, at least, that of the syphilitic placenta of Fränkel, he also states that the specimen presents no inherent evidence of a syphilitic origin.

Diseased placentas have been variously styled as scirrhous, tubercular, sclerotic, fatty, or otherwise. Ercolani recognizes several varieties of placental disease under the names hyperplasia of the villi, fibroma of the villi and of the serotina, melanosis, hyaline degeneration, etc. It is impossible to harmonize the different opinions which have been expressed. Virchow regards the fibroma of Ercolani, the sclerosis of Neumann, as a syphilitic lesion. Fränkel says, "The name varies but the disease is the same;" and looks upon Ercolani's

hyperplasia of the villi, often called fatty degeneration of the placenta, as also syphilitic in origin—as, indeed, the primary lesion, in the placenta, of this disease. Fränkel infers further that the fibrous and other conditions described by Ercolani are but stages of the syphilitic change. Fränkel's well-known observations were made upon placentæ accompanying fetuses which presented osteo-chondritis, or other evidences of syphilitic infection. He supposes the primary cellular hyperplasia to have its origin in the irritation of the syphilized blood of the fetus, stating that the lesion follows the stage in which the viscera are affected, that he has never found the disease in the placenta in the case of such a fetus under six months.

In opposition to this view, other authors deny the existence of a specific syphilitic lesion of the placenta, and claim that the lesions described are obtained also in non-syphilitic disease. The problem is, therefore, whether cellular hyperplasia, fibroma, or sclerosis, fatty and hyaline metamorphosis, are primarily one lesion or several; also, whether, as one lesion or several, they are necessarily syphilitic in their origin.

In this specimen presented we have a diseased placenta which was retained, and presumably nourished, for six months after the accomplishment of the death of the child. On account of this long retention and nourishment it should exhibit features of a markedly characteristic type. Congratulating myself upon the eminent authority of the pathological demonstration obtained for this specimen, I offer the case as a contribution toward the clearing up of the problems connected with this obscure subject of placental disease. Examinations demonstrating hyaline degeneration of the placenta are yet very few in number. Charpentier's *Obstetrics*, which treats more fully of placental diseases than any other treatise of this kind with which I am acquainted, does not mention it at all. Lusk's *Obstetrics* does not mention it. Hirst, in his new *American System of Obstetrics*, mentions it, but says it is of rare occurrence, quoting but one series of observations, namely, that of Dr. Jaennette B. Greene, published in the *Amer. Journ. of Obstetrics*, 1880. Dr. Greene's observations included those of ten placentæ thrown off at periods varying between the third and eighth

month. The placentæ had the macroscopic appearance styled fibro-fatty degeneration. Microscopic examination disclosed more connective tissue than in the normal placenta of the same age; also a homogeneous basis substance containing nucleated protoplasmic bodies. The protoplasmic reticulum of the basis substance had disappeared where the degeneration was most profound. As in our own case, this basis substance was colored by iodine, but on the addition of sulphuric acid suffered no further change. The character of the lesions was apparently the same. Dr. Greene remarks that the change was most marked in the maternal portion of the decidua serotina and in parts in immediate connection with it; that in the villi it was rarely found. In our own case, too, the degeneration was most marked in the uterine half of the placenta, although the villi were in this case profoundly affected.

In regard to the question of origin, Dr. Greene suggests morbid chemical change in the myxomatous basis substance of the placenta. Ercolani advances a somewhat similar view. Hyperplasia and fibroma he finds characterized by augmentation of the number and size of the cells of the parenchyma of the villi; hyaline degeneration due to a metamorphosis of the mucoid basis substance in which these cells are held. In one place he says, "I have several times seen this morbid formation in which the central cells (of the villi) were few and rounded, and I am disposed to consider it not as an early stage of fibrous transformation, but rather as a special morbid form of the parenchyma of the villi, which I would call hyaline transformation, because the cells of the villi thus changed are very rare, and the transparent amorphous element is abundant in it." Hirst's reference, on the contrary, does not recognize this distinction, but speaks of a fibroid infiltration of the placenta which may undergo a fatty or hyaline change. This also is the inference made by Dr. Welch.

Dr. Greene suggests that the amyloid degeneration of the placenta may not be different in its origin from amyloid degeneration in the kidneys and liver. Dr. Welch's finding of hyaline degeneration of the walls of the vessels, would appear to increase the analogies which Dr. Greene has recognized between hyaline degeneration of the placenta, and hyaline infil-

tration in other parts. It will be pertinent, perhaps, to state, too, that the pulmonary symptoms presented by the mother in this case are identical with those to which Dr. Wm. H. Porter (*New York Med. Record*, 1887), of this city has devoted considerable attention, and in which he has found an increased amount of fibrillated connective tissue, with hyaline metamorphosis of the walls of the vessels and infiltration of the surrounding parts; also encapsulated nests of cells. Dr. Porter attributes the dyspnea to the difficulty of gaseous exchange in the lungs owing to this obstruction; and the absence of râles to the rigidity given to the bronchial tubes. The enlarged liver of this patient might also suggest either a fatty or a hyaline change.

In regard to the prolonged retention of the ovum: We are told that retention of the ovum after abortion is more common where the fetus perishes as a result of disease than where traumatism is the cause; also that retention is favored by adhesion and continued nourishment of the placenta.

To conclude: We have here a placental lesion resembling in character that of the syphilitic placenta of Fränkel. In this case recent syphilis of the father is excluded by the absence in the fetus of osteo-chondritis. Recent syphilis of the mother is also excluded by examination and history. The production of the lesion under the influence of "cachexia" in the mother remains for consideration. In view of the history this vague and unsatisfactory theory of origin presents its most probable explanation. The ultimate influence of syphilis in the production of the peculiar diathesis of both the father and the mother, is still a battle-ground into which we will not venture. The evidence of this case is in favor of the view that acquired syphilis, at least, is not essential to the production of placental degeneration.

HYSTERECTOMY FOR MALIGNANT DISEASES OF THE UTERUS.

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Hysterectomy for malignant diseases of the uterus was done by Freund in 1878, and is now a recognized operation by nearly all learned gynecologists. He removed the uterus through the abdomen, but the mortality was so great that this means of operating is no longer approved of, except in a few cases where it is not possible or practicable to remove the organ through the vagina. In the abdominal method the mortality was 72 per cent., but it has been reduced by the vaginal method, in the practice of a few expert operators, to 8 or 10 per cent., and in a collection of 311 cases, operated on by Fritsch, Leopold, Alshausen, Schroeder, Staude, and Martin, the mortality is only 15.1 per cent. Martin, in fifty-five consecutive cases, had a mortality of about 9 per cent. Fritsch, in twenty-four consecutive cases, had a mortality of about 8 per cent., and Staude operated successfully in sixteen consecutive cases. As the operation is in its infancy, we may expect better results when experience teaches us more exact indications for its performance, and a more perfect technique in the details of the operation as well as the after-management of the case. In the operation for high excision of the cervix the mortality is 7.4 per cent., and by this operation it is impossible to know if we have removed all the tissues involved in the malignant growth, as the disease may have extended high up the endometrium, or in the parenchyma of the body. Nor is it always possible to do so by subjecting the tissue to a microscopical examination, and never possible except the examination be conducted by a microscopist experienced in histology.

The subsequent results are better after total extirpation than after supra-vaginal excision. Of course, high amputation should not be performed where the endometrium or the parenchyma of the body or fundus is primarily or secondarily involved. The disease may extend from the neck to the body and remain there for some time without empoisoning the system, or involving the structures in the immediate proximity of the uterus.

There are, however, a few gynecologists who deny that hysterectomy for cancer is a justifiable operation, among whom is Dr. A. Reeves Jackson, of Chicago, who read a learned paper at the meeting of the Ninth International Medical Congress, showing that the operation had destroyed nearly three hundred years of human life. This is a fearful exhibit, but statistics are often unreliable, and in many of those cases the disease had doubtless extended beyond the uterus, so that the operation was contraindicated; but experience will guide us more correctly in the future, and results will be better. Küster, at the meeting of the German Surgical Association, in 1883, reported 778 cases of removal of the cancerous breast, with a mortality of 15.6 per cent., 0.5 per cent. greater than the general average mortality following total extirpation of the uterus: but is there a distinguished surgeon who would hesitate to amputate the breast where the diagnosis of cancer is made before the disease has manifestly infected the system? If we recognize cancer as primarily local in its origin, and becoming constitutional secondarily by extension, then the correct treatment is to remove, if possible, all the involved tissues, if it can be done with a reasonable degree of safety. With few exceptions, this can be done in cancer of the uterus by total extirpation only. But if the disease has extended to any structure outside of the uterus, peritoneal, cellular, or glandular, or if there is any systemic infection, then the operation is positively contra-indicated, and no one but a pseudo-gynecologist, ignorant of the disease and of the technique of the operation for its removal, would attempt it.

Unfortunately, the popular craze in this country and in Europe to do abdominal surgery, and to record abdominal sections, has included in its grasp vaginal hysterectomy, and

these operations are now being attempted by men who are not fitted for such work, the result being a fearful mortality, because the operator knows neither when the operation is indicated nor how to perform it.

I have known of some sad examples of this in my own observation. It is positively *criminal* for any one to attempt to extirpate a cancerous uterus, or to do pelvic or abdominal surgery until he learns the anatomy, physiology, and pathology of the pelvic and abdominal structures, and knows how to make a correct diagnosis where it is possible to do so; he should also know the general principles and the details of the most approved technique for such operations. It is, indeed, gratifying to observe that the progressive medical mind has taken cognizance of this abuse, and in the future the general practitioner will be more careful in the selection of a proper person to whom he may refer such patients. These operations are among the most heroic and dangerous in surgery, and should not be done except by a person who has devoted much time and careful attention to all the theoretical and practical details relating to this subject.

The so-called gynecologist who proposes to do work for which he has made no preparation, and for which he has but little aptitude, is controlled more by a desire to advance his personal interests than to do the best thing for his patients, hence he attempts operations that the scientific gynecologist will not perform because he knows they are positively contra-indicated, and will result in injury to and probably death of the woman. It is by no means an easy matter to decide when the operation is indicated, for we are often unable to say that the disease is malignant, or how far it has extended. Unfortunately many practitioners fail to note the early symptoms of cancer, and when the woman is referred to the specialist the disease has extended so far that it cannot be removed.

No effort should be made to extirpate the uterus if there is evidence of cancerous cachexia, and if, in a careful physical examination, any structure outside of the uterus in the pelvic cavity is at all infected. In every case when the diagnosis is not complete by a physical examination of the patient, part of the growth should be removed and carefully examined

by a skilled and an experienced microscopist, whose opinion will do much to aid us in deciding upon the propriety of an operation. But the microscopist cannot always differentiate between a benign growth and cancer. He knows that diseased cervices are more liable to cancer than sound ones, but can scarcely distinguish between the "heterologous glandular development invading new tissues with reduplication and proliferation of epithelium external to the contiguous basement-membrane of the glands, and a cancerous degeneration, where the cells, breaking through into the lumen of the glands, grow inward, forming solid plugs or processes instead of hollow tubes or acini." The transition of glandular erosion into cancer is often so insidious that it is nearly impossible to decide just when the change occurs. Nor is it positively shown that cancer always originates in the new-formed glands; the cervix may be infiltrated as a "carcino-sarcoma, an aggregation of small cells, lying in masses, more or less completely separated by partitions of connective tissue," with no direct connection with the epithelium or the glands. Probably the following conclusions of Fürst are about as reliable as any we have seen, viz.:

1. "Adenoma uteri simplex, or simple glandular hyperplasia, in which the uterine glands are increased in number and enlarged, but still preserve their typical character in structure and as to their epithelial covering—in which, also, the interstitial tissue is compressed, though there is no evidence of extraordinary cell proliferation—must be regarded as benign. It is not advisable, however, to treat this condition by curettement, application of caustic substances, and similar means, but by excision, for the new growth tends to malignant degeneration."

2. "Adenoma uteri-suspectum, or destructive glandular hyperplasia, which, whether it is localized or diffuse, shows a new formation of atypical gland tubes, together with more or fewer normal glands imbedded in connective tissue, which is rich in cells—which also shows an increase in the gland epithelium, and a tendency to proliferation in its lower portions—must be regarded as a suspicious condition, and inclined to malignancy, even in cases where no solid processes are demonstrable. In such cases excision will not suffice, but the uterus should be extirpated as soon as possible, the prognosis with reference to radical cure being good."

3. "Adeno-carcinoma uteri, in which the typical gland formations have almost entirely disappeared, and in which we find epithelial infiltration and cancer processes in a foundation which is rich in cells, is absolutely

malignant in character. Even if the uterus is extirpated, the prognosis as to radical cure is not good, for the chances of being able to extend the section into healthy tissue are poor, hence the treatment can only be palliative for the greater number of cases."

4. "The clinical symptoms in connection with cervix adenoma are of less value in determining as to operative procedures than the result of the pathologico-anatomical examination. As early an examination as possible of an excised portion of the mucous membrane is therefore imperative."

Asepsis, or perfect surgical cleanliness, should be enforced in every detail of the operation. The operation should not be performed until the bowels are well moved, and the woman has washed her entire person in a bath of hot water and pure soap. Two gallons of hot water should be injected into the vagina just before the operation.

Weak solutions of disinfectants may be used, but I doubt their efficacy, and strong solutions of bichloride of mercury or of carbolic acid are positively poisonous. The woman should be placed on her back, and when under influence of an anesthetic the uterus should be drawn through the vulva and separated with the scissors or knife from its vaginal attachment, being careful not to wound the bladder or to cut the uterine artery. After separating the uterus from its anterior and posterior attachments, carefully avoiding wounding the bladder, ureters, or rectum, catch forceps, such as I have devised, or such as are used by other operators, should be fastened on each of the broad ligaments, outside of the ovaries and tubes, so as to cut off the blood supply to the uterus. The uterus, ovaries and tubes, may then be separated from the broad ligaments and removed through the vulva. This may be done without retroverting or anteverting the uterus to bring down the fundus. No sutures are needed. If there is any considerable hemorrhage from the cut edges of the vagina, it can be readily controlled by applying small catch-forceps, and, if necessary, leaving them in position. If it is desirable to bring together the peritoneal edges of the vaginal opening, this may be done by holding the anterior and posterior edges in apposition by catch-forceps. The smaller forceps may be left in position for twenty-four hours, and the larger ones, including the broad ligaments, may be removed in forty-eight hours. By

this means the uterus may be extirpated in less than half the time consumed in operating after the fashion of Schroeder and Martin, and the loss of blood should be too insignificant to be an important factor. But no one should attempt this operation until he is prepared and equipped to meet any emergency that may arise.

A CASE OF REMOVAL OF THE UTERINE APPENDAGES. HISTORY AND TREATMENT PREVIOUS AND SUBSEQUENT TO THE OPERATION. A DOUBLE FALLOPIAN TUBE.

By FRANK A. GLASGOW, M.D.,
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At the present time, a case of removal of the uterine appendages, or, as it is quite commonly termed, Tait's operation, should possess something unique to warrant its publication. I should include in this class those numerous unrecorded cases where, not *death*, but *failure to cure* has resulted.

An accurate account, giving previous symptoms and treatment of half a dozen such cases, would be worth whole pages of operative statistics. The operative technique is now almost perfect. The risk of opening the abdomen has been reduced so low that laparatomy is advocated and practised by some as a diagnostic measure. Our prognosis in regard to life and death can be given with a great degree of accuracy. The prognosis in regard to a cure of the symptoms presented is, however, not at all satisfactory.

As assuredly as we know anything, so certain are we that this operation will relieve or cure many cases, but we do not know how certainly to recognize those cases where the operation will prove worse than useless.

We will never know the true worth of the operation and the cases for which it is suitable until we get these before-mentioned negative statistics. We cannot undo what we have done, hence we should be doubly careful in selecting cases for operation. It is the fashion now to decry the operation; how just this is, I am unable to say. Judging from the numerous cases reported by some, I fear that there is much needless, perhaps criminal,

mutilation going on. Surgeons are naturally inclined to take a short decisive method to cure even at some increased risk to the patient. There is hardly anything good in medicine which has not been abused. The more evident its benefit in certain cases, the more likely is it to be used indiscriminately and in inappropriate cases. Witness calomel and phlebotomy.

I suppose that after the above I should report a case of failure to cure. My excuse must be that I have not been so unfortunate as to have one yet. My list of such cases has been small, only comprising three. In one case operated upon on April 9, 1886, only one ovary and tube was removed, the other appearing to be healthy. The ovary removed contained a number of small cysts which ruptured on removal. This was not properly a Battey or Tait's operation, but an ovariotomy. It did not cure the patient but relieved her very much. I have always regretted that I did not remove the other ovary and tube. This patient reports at long intervals for me to use galvanic electricity on her. This is the only thing that relieves her. She has endometritis, prolapsus, and general pelvic pain. This patient made a remark this summer that made me feel very uncomfortable until she explained. She said she wished that I had not operated on her. On asking her why, she answered that she would have been dead long ago, as the pain before the operation was so fearful. The other case referred to was similar to the above, and was operated on June 15th this year. In this case I removed both ovaries and both tubes. I received a letter from this patient August 24th stating that she was entirely relieved. I heard later that she was well, and working in a watch factory.

Now in regard to the case to be reported:

March 31, 1885. Miss K. N., American, aged twenty-three, single. Catamenia regular until one year ago, since which time it has recurred every three weeks. Flow scanty, lasting four days. Pain from shoulder down the back for three or four days previous to and during flow; cramps over the womb and headache; is never entirely free from pain; she has never, from her earliest recollection, been able to take any violent exercise without suffering severe pain in the lower portion of the abdomen.

Last menstruation, March 6th–10th, painful. The patient seems in good physical condition, but is stout. The examination in the clinic-room was unsatisfactory on account of the fleshy condition of the patient, and the

great sensitiveness of the parts. A few days later, after entering the St. Louis Mullanphy Hospital, an examination was made under ether. The uterus was found retroverted. There was a tumor the size of a large egg to the right of the fundus, and above. This could scarcely be felt from the rectum, but could be felt from above the pubis. It gave the sensation of a tense cyst. The patient was given a course of treatment in which quinine, morphia, blisters, and syr. ferri iodidi were used. An attack of acute parenchymatous nephritis, also some pelvic cellulitis, occurred.

May 14th. Severe pain over the left kidney. Under cupping, antirheumatic and antilithic treatment the patient recovered from her nephritis, but not from her pelvic pain.

The womb was held in place for a short time by a flexible Hodge pessary and she was given bromide. On July 29th I began to pack the vagina with dry cotton and iodoform. After about two weeks of this treatment the patient felt so much relieved that she went home. She attended the clinic from this time at intervals until March 22, 1886. At this time an examination without anesthesia showed a rounded mass high up in Douglas's cul-de-sac. Some exudation on posterior portion of the cervix uteri, cervix being very sensitive. There was much pain in the back, which was increased on defecation.

From this time until July, 1887, all of the ordinary means of relief were used, but, excepting electricity, with no benefit. The patient being compelled to earn her living, did not come to the clinic often.

Having failed to get relief from other means I settled down to the use of the continuous galvanic current. Seven or eight cells were used for twenty minutes; the positive pole in the vagina, the negative on the lumbar spine or abdomen. Later the current was measured and ten to fifteen milliampères were used. This was almost invariably followed by relief, which lasted from three days to a week. The pain when not able to use the electricity was intense, lasting from one period to the next. I was never, during this time, able to make a satisfactory examination.

For five months—June, July, August, September, and October, 1887—the patient noticed gushes of very fetid clear water from the womb. This occurred sometimes immediately after, always within three days of, the cessation of the menstruation. It was accompanied by severe cramps. After lasting two or three days this watery discharge would cease, leaving her somewhat relieved. The watery flow in September was not so profuse as the preceding.

On October 8th I noticed a tumor posterior to the uterus. The uterus was not much retroverted. Used galvanism—seven cells—for ten minutes. I now, for the first time, advised an operation, as I felt sure that the hydrosalpinx was the cause of the increased pain.

The patient entered the St. Louis Mullanphy Hospital October 24th, the watery flow having ceased a few days previously. An examination under ether showed the left ovary apparently normal. The right tube was thickened, but empty. The right ovary was attached to the posterior surface of

the broad ligament close to the uterus. I hoped from the condition found that I might still avoid an operation if I could keep the tube from refilling.

The vagina was packed (the patient being in the knee-chest position) every few days, except when she was menstruating, until December 8th. The tube did not refill, and there was no watery discharge, but the suffering grew more intense.

An examination now showed the same condition as on October 28th, but the left ovary was found to be attached to the brim of the pelvis. The suffering had been so severe that I was compelled to try all kinds of anodynes —antipyrin, urethan, chlorodyne, and the various preparations of opium. All opium preparations caused nausea and vomiting. Antipyrin acted best, but lost its effect, and made her feel "weak." I decided to remove the ovaries and tubes as a *dernier ressort*.

After the ordinary preparation, viz., fluid foods, saline laxatives, a daily lukewarm bath, and vaginal douches, the patient was put on the operating table December 22d. Her condition was excellent. Temperature 99.2°. I was assisted in the operation by Drs. E. H. Gregory, Tupper, McCabe, Lindsley, and E. Gregory.

The condition found was exactly as previously made out. The right tube was thickened, congested, and larger than normal. There was nothing unusual in the operation, except that I divided the tubes (after tying) with the cautery, and in closing the abdominal cut I brought the aponeurosis of the abdominal muscles together with a continued catgut suture gradually, as I tied the deep silk sutures. The dressings were as usual. Having noticed that the dressings had a tendency to slip upward, I fastened them down by means of a rubber tube passing between the thighs.

The condition of the patient after the operation was good. 7 P. M., temp. 99.3°, pulse 84; no vomiting. By 9 P. M. the patient was suffering excruciating pain, apparently from the abdominal stitches. I dared not give her any preparation of opium, so I administered five grains of antipyrin hypodermically. It acted with unhoped-for efficacy. Within fifteen minutes the patient was asleep, and she continued so for several hours. The first dose was given at 9 P. M., a second at 1.15 A. M., and a third at 5.30 A. M., after which no more anodynes were used. I have never heard of antipyrin being given to a patient after laparatomy.

I will not dwell on the after-treatment, as there was nothing unusual. The highest temperature and pulse was at 9 P. M. on the day following the operation—pulse 120, temperature 101°. After the first forty-eight hours the pulse never went above 102, nor the temperature over 100°. The incision was completely healed on the sixth day. The relief from pain began almost from the day of operation.

The subsequent history of this patient is very unusual.

For about one month she was entirely free from pain, then a sudden sharp pain began over the right kidney. Her urine was intensely acid and scanty at this time, but did not show any crystals. This was to all appearances due to renal calculus, so she was put on alkaline drinks, under which she slowly improved. It required several months for the pains entirely to leave

her. I was much worried for fear it might be a hysterical pain replacing the pelvic trouble.

On January 23d, or just one month after the operation (last menstruation December 8th), the patient complained of a congestive headache, and great sensitiveness over the whole abdomen. She said that she felt just as she was accustomed to feel before being unwell, but without the pain in her back and ovarian regions. I purged her freely for two days, but it did not relieve her. Then I took about seven or eight ounces of blood from the median basilic vein. Shortly after the bleeding she felt relieved, and the next day she was all right.

On February 20th the same sensations occurred.

On the 21st I took two ounces of blood. Toward evening the patient felt so much worse that I was sent for. I bled her again, taking eight ounces. This relieved her as promptly as it had done the previous month.

March 2d to 4th the same symptoms returned, but in a milder degree. I did not bleed.

March 13th, and every succeeding month until August, I have been compelled to bleed the patient. In July very little blood was taken, and in August I did not think it necessary to bleed, as she had only a headache. This patient has never lost any blood from the uterus since the flow which occurred two days after the operation.

I will not theorize as to this recurring vascular plethora, but certainly there is not a particle of the ovaries or tubes left, as I have them complete in my office. For months the patient has been a well woman. She told me this summer that she had never known what comfort was before. I will here state that this case was looked on as one of cystic and inflamed ovaries in 1885, and was treated as such. It was not until six months before the operation that I was convinced of there being hydrosalpinx present. Possibly I was excusable in not recognizing it earlier, as the patient was very fleshy and sensitive, and an examination under anesthesia was not practicable.

Pathology.—At the first glance, the ovaries and tubes do not present sufficient change to account for the symptoms. The cavities of both tubes have evidently been dilated beyond the normal, though now empty. The epithelial layer of cells is perfect, which is not always the case in hydrosalpinx. The condition of the tubes certainly, to my mind, precludes the possibility of a hydrosalpinx having existed since 1885. In this case the tumor felt in 1885 must have been what we took it for, viz., an inflamed cystic ovary. The indurated condition which we find in these ovaries, is the last stage of the inflamed

ovary. A microscopical section of these ovaries shows a proliferation of connective tissue (with very few nuclei), and an amyloid change of some of the arteries. This amyloid material does not take the lithio-carmine stain. In places there is cicatricial tissue. There is a marked absence of Graafian follicles. Some small cysts are present. One of the ovaries is very much shrunken. There is a small parovarian cyst, the size of a large filbert, in the left ligament.

The left ovary, which is much shrunken, has small papillary outgrowths on one side; these much resemble fine condylomata.

The left tube is double in its proximal two-thirds. The first, one-eighth of an inch from the uterus; I am unable to make out the second tube distinctly; from here on it can be made out. In the outer third I can make out but one tube.

There appear to be two ostii, but one does not admit a fine probe far enough to make certain that it is a genuine ostium. The fold from this ostium runs to the other, so there may be only one ostium. Multiple ostea are no uncommon occurrence, but I have never yet seen any account of a tube double at its uterine end. This is a very interesting physiological fact, as it follows that there must have been two Müllerian ducts on the left side.

The microscopic sections were cut for me by Dr. E. M. Senseney, of this city, who first discovered the fact that the tube was double.

THE DIAGNOSIS AND TREATMENT OF UTERINE FIBROIDS.

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We do not expect, in discussing this subject, to present any new theory as to etiology, pathology, or treatment of fibroids, but shall only try to formulate our conclusions from our own and the experience of others. We shall make but little reference to the bibliography and other sources whence we draw our information.

The Anatomy of Myofibromata or Fibroids of the Uterus.—These neoplasms have their start in the proper substance of the womb, and are made up of connective tissue and unstriped muscular fibres, and are benign in character. As one or the other of these histological elements predominates they will differ in character.

If the tumor represents, mainly, a simple hyperplasia of uterine tissue, such as is normally seen in pregnancy, there is a preponderance of muscular over connective-tissue elements. In that case the growth approaches the type of pure myoma. On the other hand, from the very incipience of the new formation the connective tissue predominates, or if it does so secondarily, by fibrous induration, we have an almost pure fibroma. But both varieties of tissue invariably coexist in these growths.

It is not considered best by good authorities to divide these tumors into myomata and fibromas in accordance with histological principles.

"A better plan, and one based on clinical symptoms, is to separate hard from soft fibromyomata. A diagnosis in this case is often possible, thus justifying the distinction recognized by English authors between white fibroids and fleshy or red fibroids. The latter variety is always characterized by the preponderance of muscular elements."

Such tumors are always furnished with an abundance of blood-vessels and but little loose connective tissue. This variety of soft

fibromyomas is intimately connected with the uterine substance, and is separated with great difficulty. It might be said that they constitute a local hyperplasia. The white fibroids are of hard, dense structure, with less vascularity, with a predominance of connective-tissue elements loosely attached to the surrounding uterine wall. They are with difficulty injected from the uterine vessels. The mode of development is not established beyond controversy. Klebs describes a peculiar arrangement of the muscular fibres. According to this author, they are connected with the vessels in such a way that bundles of smooth fibres surround the large capillaries, thus leaving a space between the vascular sheaths and the muscles. Such crevices he regards as lymph spaces. The growth of the tumor he then explains by a process of proliferation which begins in the connective tissue and muscular fibres that belong to certain vessels. In this way, he thinks, a number of small growths originate, which, by agglomeration, at length produce a large tumor.

On the other hand, Kleinwächter describes the evolution of fibroids from certain round cells which occur alongside of slowly obliterating capillaries. These round cells are transformed into spindle-shaped corpuscles, which arrange themselves in such a way as to form myomatous nodules. Nerves have been demonstrated in these growths. The soft variety is generally single; whereas, the hard or fibrous are frequently multiple, and much more common than the soft. They are found imbedded in the muscular fibre of the uterus, which have pushed aside, and form a smooth bed or capsule, from which they can be readily turned out. They are surrounded by loose connective tissue, lying between the tumor and its capsule. This capsule is not a true investing membrane. The bloodvessels are formed in this loose connective tissue and the adjacent uterine substance, which is often channelled out into cavernous structure. The bloodvessels consist mostly of veins, sometimes attaining a large size; the arteries are smaller and less numerous. The neoplasm receives its blood-supply from this source, and its nourishment and growth are effected.

As a general rule, fibroids grow slowly—growth continuing during functional activity of the sexual organs. They may exist singly, but oftener are multiple, and are found from the size of a buckshot to sixty pounds weight. The favorite site for development is the posterior uterine wall; next, anterior fundus, sides, and cervix, in the

order named. They develop in the direction of least resistance, which fact is of great significance as regards symptoms and course. When the morbid process begins in the subperitoneal layers of the uterine tissue, the tumor, following the law of development—that of least resistance—grows out into the abdominal cavity beneath the peritoneum, constituting the subserous fibromyoma. Tumors developing in the muscular wall of the uterus, displacing the fibres equally in every direction, are *interstitial*, *intramuscular*, or *intraparietal* myoma. Tumors beginning in the structure beneath the mucous lining, developing mostly toward the uterine cavity, are designated *submucous* fibroids. All tumors of this kind of structure, which are not attached by a pedicle, and, therefore, subserous or submucous, should be classed as interstitial; but a strict anatomical division cannot always be maintained.

Subserous fibroids are attached to the uterus by pedicles of variable dimensions as to length and thickness; some are scantily furnished with bloodvessels, whilst others are supplied with large arteries and veins. This variety sometimes forms adhesions to surrounding viscera or the walls of the pelvis, and by the development of the womb, as in pregnancy, the pedicle is ruptured; and, though entirely separated from the uterus, their vitality and growth are maintained through the blood-supply of the new attachment.

We should always remember that subserous tumors with long pedicles are subject to twisting and gangrene, resulting from strangulation. The most common seat of these tumors is the posterior wall of the uterus; they are found but seldom at the side in the broad ligaments. Usually they are multiple, though some may be intramuscular or submucous.

Submucous fibroids hang by a pedicle within the uterine cavity. They are entirely covered with uterine mucous membrane, as are also their pedicles. The pedicle is sometimes formed of mucous membrane alone. These so-called fibrous polypi differ greatly from tumors with broad bases which project into the cavity of the uterus. These latter, with their pedicles, are encapsulated by proper uterine fiber and covered by mucous membrane. The muscular tissue predominates in their make-up, and approaches more nearly the myomata or soft fibroids. There is but a scanty growth of intramuscular connective tissue. The larger the tumor, the greater the circumference, the shorter and thicker the pedicle. The large sub-

mucous myomata have usually such broad bases that it is difficult to distinguish them from the interstitial variety.

Submucous fibroids are of a round or oval shape; sometimes have been found of an hour-glass shape, from the bite of the internal or external os, the part extruded, succulent and swollen from partial strangulation. These tumors are often quite vascular, while large bloodvessels are seldom found in the pedicle, though it is be noted that there are exceptions to this rule, and arteries as large as a crow's quill have been found to traverse them. Large veins are often found in the adjacent walls of the uterus, amounting to varices in some cases. The changes in this organ occasioned by the presence of these tumors are quite constant. There is hypertrophy in the same form as in pregnancy.

The intraparietal (intramuscular, intramural, interstitial) fibroids develop deep in the substance of the womb, stretching its walls equally in every direction, and have a capsular covering of uterine fibers entirely surrounding them. But, as they grow, they bulge outward toward the peritoneal surface, and inward toward the uterine cavity, becoming partially subperitoneal and partially submucous; consequently, the uterine cavity is distorted, being bent sometimes at a sharp angle. The uterus undergoes changes very like that which takes place in pregnancy, becoming hypertrophied in all directions. But the contrary of atrophy is not seldom found in which the uterine wall disappears, leaving nothing but the peritoneum covering the tumor. This condition is not dependent entirely on the size of the tumor, but largely upon the age and condition of the patient.

The structure of these growths in a majority partakes more purely of the myomas, presenting a localized hypertrophy of uterine substance. They resemble in fiber very nearly the muscular tissue of the gravid uterus. They often attain considerable size, and are not infrequently multiple or mixed with other varieties of fibromata.

We might be justified in making a sub-class of fibroids of the cervix, not only on account of their rarity, but because they occupy a peculiar position as regards diagnosis and symptoms. We will, therefore, give some special attention to them.

Fibroids of the cervix in all three forms, subserous, submucous, and interstitial, are developed exactly like those of the body.

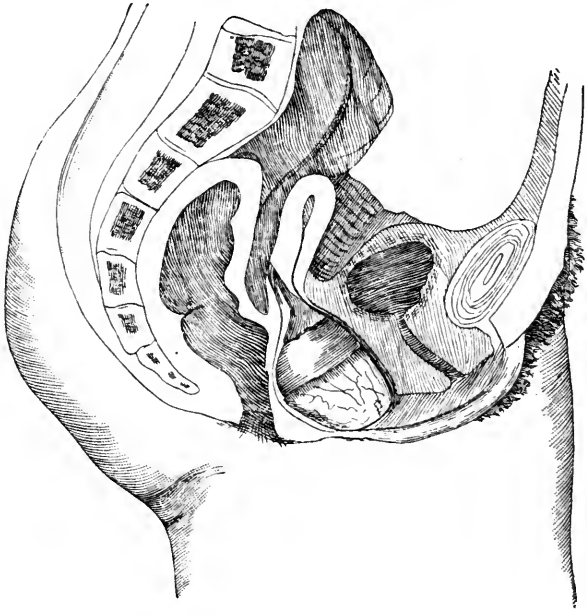
"Those which have the greatest clinical interest, and whose removal seems impossible, are the subserous fibroids of the neck of the womb. These usually grow outward and posteriorly from the cervix—seldom laterally. They are developed either toward the abdominal cavity between the layers of the broad ligament, or pressing up the pelvic peritoneum, or else they grow downward behind the uterus, or at its side, into the connective tissue of the pelvis, alongside of the vagina. In the latter case, they may be taken for tumors of the vagina. In every case, when they have attained a certain size, they must fill the pelvis more or less and occasion thereby grave symptoms, especially during childbirth. Since the attachment of the uterus is close, the mobility of these is greatly restricted, especially as they cannot be pushed into the abdominal cavity on account of their extra-peritoneal situation."—*Gusserow.*

Submucous and interstitial fibroids of the cervix are somewhat more common than subserous—but few are found reported in the literature of the subject. All the observers of whom I have any knowledge agree upon the difficulty of diagnosis, and of that in the differentiation of this form of tumors from inversion of the uterus. Tumors developed from the body of the uterus, having been extruded through the os, have repeatedly been mistaken for inverted uteri, and *vice versa* the inverted uterus has been removed more than once, being mistaken for a fibroid. It is the judgment of the most careful observers, that, in all doubtful cases, the presenting specimen should be treated as an inverted uterus.

We will here give the history of a case of an interstitial fibroid of the posterior lip of the cervix, which will add one more to the comparatively few cases recorded, and, at the same time, illustrate the difficulties of diagnosis of tumors in this situation.

CASE.—Married woman, of stout habit, with an enormous accumulation of adipose abdomen; forty-six years old; menstruating regularly; had but one child, eighteen years old; always enjoyed good health, but experienced a feeling of fulness in pelvis the past year and a half. While lifting a heavy stove she felt something give way—tear, as she expressed it—in the pelvis; felt some pain and suffered a feeling of weight and dragging, with a bloody discharge. She gave it but little attention until a discharge came on which assumed a fetid character, when she discovered something presenting at the vulva. She also began to have rigors, and daily exacerbation of fever, followed by debilitating sweats. At this juncture, four weeks after the account related, I first saw the case, and found the following condition: A tumor filled the vagina and presented at the vulva; a dark, sanguinolent fluid, very fetid, flowed constantly. On separating the labii the tumor presented a dark, livid, mottled with dusky-red, appearance; dark purple vessels were seen coursing their way over the surface, turgid with blood. The tumor was firm to the touch, but no sensation, and was ovoid or pear-shaped, the

large end down. With difficulty the hand could be inserted alongside of tumor; but, by persistent effort, the tumor was discovered to issue from a ring of tissue which appeared to be the os, but to which it was adherent; above this ring, to where it seemed to issue from the vault of the vagina, it was not thicker than my finger. The question came up for solution, Is this an inverted uterus, or is it a fibroid? There was not a history of symptoms to establish either theory. Here is a woman, forty-six years old; only child eighteen years old; with regular, painless menstruation; with but one symptom—that of feeling a pelvic fulness; having developed a tumor suddenly by a heavy lift, with a feeling of tearing. My first thought was that the tumor was an inverted uterus, which had been partially inverted from some unknown cause, and, by the heavy lift, the fundus had been forced through the os and inverted to the vaginal junction; that it there became strangulated, and inflammation produced adhesion; that the attenuated portion, above the supposed os, was the vagina put upon the stretch by the descending organ. The enormous accumulation of abdominal fat precluded any bimanual examination in that direction, and with finger in rectum and sound in bladder I failed to discover any uterus between.



The tumor, or uterus, was in a state of gangrene, and must be dealt with. Preparation was made to extirpate. The tumor being drawn through the vulva, a last and careful examination of the pedicle that attached to the vagina disclosed a mere dimple on the anterior part of it; and, by trial, the sound passed through and up into the cavity of the uterus not to exceed three inches in depth. The tumor was ligated, and cut close to the ligature;

the stump came away in one week, and the woman recovered without a single bad symptom. Here was one of those rare cases of interstitial fibroids of the posterior lip of the cervix, developed slowly without producing any subjective symptoms, from the fact that it produced no trophic change in the womb, that organ remaining normal in size.

The tumor was ovoid in shape, eight inches in its long diameter and four in the short. Its structure was largely of white, fibrous connective tissue. The lower half was covered with the cervical tissue forming the capsule; the upper half was denuded of capsule to where it was attached to the cervix —the ring of tissue I mistook for the adherent os and cervix; the pedicle above this was the attenuated posterior lip of the cervix, which had been so stretched and drawn down as to involve partly the anterior lip. The free anterior lip being stretched against the tumor, the os was obliterated to a mere dimple. The drawing presents a very correct picture of the case. Careful and patient search will generally reveal the os, though it may appear as a mere slit or dimple on the posterior or anterior surface of the pedicle, determined by the part of the cervix from which the tumor is developed.

Adhesions sometimes form between the vagina and tumor, which render diagnosis still more difficult. Speigelberg saw a fibroid arising from the posterior wall of the cervix, which had become wedged into the vagina and had formed adhesions with its anterior wall.

Dr. Jenks describes and illustrates, by a drawing, a case of supposed inversion of the uterus, which proved to be a fibroid developed in the posterior half of the uterus which had acquired adhesions to the vagina.

The great difficulty is in diagnosticating these tumors. The growth and morbid changes in these tumors have been carefully studied by competent observers, and furnished valuable data upon which to predicate a prognosis and treatment. As a rule, they grow slowly —those composed of connective tissue more slowly than those made up of muscular fibers. Growth is generally hastened by pregnancy. They cease to grow after the menopause, and have been repeatedly observed to diminish in volume. Women having fibroids reach the climacteric period later than others, the average being 49.14 years, with a per centum running over fifty. Tumors growing beyond the menopause are likely nourished through adhesions to other organs. They are subject to inflammation, gangrene, calcification, and it is a case *sub judice* as to their being the primary seat of carcinoma. That they are frequently involved by extension or

infiltration of cancers having their start in uterine tissue is a fact well attested by many competent observers.

Gusserow says: "As to the etiology of fibroids of the uterus, we know as little as we do about that of most pathological neoplasms, namely, nothing." We will not attempt to review Virchow's *irritative theory* supported by the careful observations of Winckel; neither Cohnheim's *embryonic tissue* origin of all neoplasms, nor yet the later bacterial genesis of tumors; but leave it for the future, pregnant with many questions as to the cause and cure of disease, to bring forth in the fulness of time.

Though fibromata of the uterus are simple in their anatomical structure, yet they give rise to manifold symptoms. These symptoms might be classed as largely mechanical, depending on size and location. Tumors exist in very many cases without producing any inconvenience, being discovered by accident in many cases during life, in a much larger number post-mortem. The measure of their disturbing quality is, as a rule, in the ratio of their size, and the sexual activity of the organ they occupy. The climacteric generally terminates their growth, while the marital relation and gestation light up great activity in their symptoms. The symptoms of uterine fibromata develop chiefly after puberty and probably depend in the main upon the location of the growth. Nevertheless the individual phenomena are neither so characteristic nor so constant as to enable us to determine from them alone the location or the tumors; namely, whether they are subserous, submucous, of chiefly interstitial. This is readily understood when we remember that even the anatomical limits between these three varieties cannot always be accurately defined. Among the various symptoms of fibroid of the uterus there are two which for constancy of occurrence and importance are preëminent. These are hemorrhage and pain.

Hemorrhage is generally the first to make its appearance, and that at first as an excessive menstrual flux, which increases with the growth of the tumor until it becomes a metrorrhagia. Subserous tumors do not produce this symptom, as a rule, especially the pedunculated variety. Submucous tumors generally bleed, and the pedunculated variety most of all. Pain is an important symptom, and from its character we can often judge of the variety of tumor. Pain or abdominal sensations is very constantly associated with the development of fibroids; it manifests itself first at the menstrual

epoch, and is of a stretching or dragging character in the interstitial variety in consequence of the distention of the uterine walls or swollen condition of the tumor, that being the result of menstrual congestion.

These cases are frequently marked by intense pain until the flow begins, which relieves the pressure and with it the pain.

Pedunculated subserous tumors are not always free from pain, but are liable to undue distention through the blood supply; that depending on the size of the vessels permeating the pedicle. When these are large the swelling and pressure at the menstrual period produce well-marked peritoneal irritation, affecting the serous envelope of the tumor, and in this event there is acute pain on external pressure. Peritoneal pains are not felt at other than the menstrual periods, in subserous fibroids, unless accompanied with peri-uterine inflammation, which is always attended with rise of temperature. The submucous variety of fibroids provokes during the menstrual period pains resembling labor pains, which, like labor pains, are a result of uterine contraction. The more the tumor projects into the uterine cavity the stronger the contraction. These tumors produce various pressure-symptoms upon pelvic viscera, vessels, and nerves, when they become incarcerated, which conditions may result from inflammatory adhesions, or the particular part of the uterus from which they develop.

The course of the tumors under consideration is influenced chiefly by the anatomical changes to which they are liable. Among these the most favorable and consequently the most important one is their complete disappearance, either by absorption or spontaneous exfoliation. Both processes are, indeed, exceedingly rare, and are generally caused by childbed and parturition. As to the absorption of fibroids during the puerperal state, we have many and well-attested instances from competent authority, after deducting probable errors in diagnosis. Hard, indolent, often spherical pelvic exudations attached to the uterus have often been diagnosticated as fibroids. Taking into account the anatomical structure of fibroids as identical with that of the uterus, and that their growth is stimulated by the evolution of that organ during pregnancy, it is not strange that they should sometimes share in the process of involution and disappear. We might look for that to be the rule rather than the exception.

The following case I add to those already reported:

Mrs. M., aged thirty-six years, primipara, had rather a tedious labor; on examining the uterus preparatory to delivery of the placenta I thought it contained another child, on account of its large size. I was unable to discover a presenting fetus; pains soon expelled the after-birth, and I prosecuted the examination to the extent of introducing the hand into the uterine cavity; finding no child I was soon enlightened as to my error by the discovery of a large interstitial fibroid developed in the left and posterior wall of the fundus uteri. The tumor was considerably larger than a child's head. I was much more surprised upon examining my patient two months later to find that the tumor had entirely disappeared. The involution of the tumor must have kept pace with that of the womb, as my patient reported that she could find nothing of it in four or five weeks.

Absorption has been observed in cases not connected with pregnancy, but there are not many authentic cases reported.

Fibroma may be spontaneously expelled; this is true mostly of the submucous variety.

Calcareous degeneration, to which they are subject, sometimes eventuates in their exfoliation and expulsion in the form of the so-called uterine calculi. Gangrene or purulent softening sometimes terminates these neoplasms and generally the life of their unfortunate possessor.

In diagnosticating these tumors we must avail ourselves of their natural history; the symptoms they excite, together with abdominal, vaginal, and rectal palpation, the uterine sound occupying a prominent place among the available means of diagnosis.

Submucous tumors produce a uniform or symmetrical enlargement of the uterus, preserving its natural form, except, perhaps, becoming more globular; when they have attained a certain size they produce shortening of the vaginal portion of the cervix.

Although profuse hemorrhages and uterine discharges may, in such cases, suggest the existence of chronic metritis, the uterine pains generally present, and which resemble labor pains, will direct attention to the presence of a foreign growth, that can only be fully made out after dilatation of the cervix and direct palpation. Interstitial fibroids when small are difficult to diagnosticate. Pain and hemorrhage at the menstrual period may suggest metritis or a tumor. Sometimes we are able to make out these growths when quite small, where they have produced retroversion or flexion, as a case under present observation demonstrates, in which a small

tumor not larger than a filbert has produced retroflexion, dragging the bladder with it, causing cystitis, and during the menstrual flow severe uterine colic. In the above instances diagnosis is easily made by palpation through the rectum, the fundus uteri occupying the cul-de-sac of Douglas.

The interstitial variety, when small, is often mistaken for metritis, as that condition often exists as a result of the presence of the neoplasms. When the tumor is located near the internal os there will be shortening of the vaginal portion of the cervix, producing the same condition of that portion of the uterus that submucous fibroids do when they encroach considerably upon the uterine cavity.

There are present the stretching or dragging pains preceding the menstrual flow, which are often markedly relieved by the latter occurrence. The sound often reveals the sinuous condition of the uterine cavity, rendered so by the encroachment of the tumor. The canal is lengthened in the ratio of the tumor's size. The diagnosis is rendered difficult when several tumors are present. Thorough dilatation of the cervix will enable one by palpation to judge of the depth beneath the mucous membrane and the breadth of the interstitial fibroid. The direction of the cervix uteri often serves to indicate the seat of the tumor. If it is notably inclined toward one side, the tumor is located on the other side. If the position of the cervix be unchanged, the fibroma is generally pedunculated, submucous, and small.

Subserous tumors are determined by their connection with the uterus. The facility with which they can be moved independent of the uterus is largely determined by the sound in the uterus, and hand grasping the tumor through the abdominal wall. The smaller the pedicle the less will the uterus be enlarged.

The broader the base of a subserous fibroid the more difficult it is to decide whether the tumor belongs to the uterus or only adjoins it; this is particularly true if the fibroma be of large size. The difficulties are still further increased if the tumor has become incarcerated, retrovaginal, or acquired extensive adhesions to other viscera.

The differential diagnosis of fibromyomas from uterine displacements, epithelioma of the cervix, pregnancy, and ovarian tumors, must be passed without further notice.

TREATMENT OF FIBROIDS.—As medical and surgical healers, we ought to adopt the Apostle Paul's advice in ethics: "Prove all things and hold fast that which is good." We shall discuss briefly the three methods now prominently before us, each of which has its claims and special cases suited for treatment: (*a*) treatment by surgery; (*b*) treatment by ergot; (*c*) treatment by electricity. The surgical procedure which imitates nature and brings about the menopause by the removal of the uterine appendages, we will first consider.

The cases adapted to *surgical interference* are pedunculated submucous fibroids and all varieties upon which ergot and electricity have been tried and failed; and the patient is in imminent danger of her life.

With such cases the surgeon has an open field. Though it may be an unequal fight with death, yet he should not hesitate, for under these circumstances one per cent. rescued from death is success.

Laparatomy with castration—spaying—is not attended with very high mortality when properly performed. The results of this operation justify it—nay, I may say, the refusal to perform it in suitable cases is at least a dereliction of duty.

"At the present time, therefore, the following may be said concerning the value of spaying for uterine fibroids. The operation leads with great certainty to the arrest of hemorrhages, provided the uterine tumors are not too large, and in a condition of cystic degeneration. It is a much safer operation than extirpation by hysterectomy. The mortality of castration has been reduced to about ten per cent. That of radical extirpation is above thirty per cent. On the other hand, those who recover from the operation of castration still carry with them their uterine tumors, the presence of which entail, manifold dangers; again, a not insignificant proportion of those operated upon continue to have the same pains, and other symptoms due to the presence of the fibroids as before spaying. Those who survive extirpation are permanently and completely cured. Extirpation is the ideal method of dealing with these growths. In comparing the mortality of spaying with myomotomy it must not be forgotten that the latter operation has certain cure in its favor, which is unattainable by castration."

The ergot treatment of fibroids was, we believe, first introduced into Europe in 1872, by Hildebrandt, and first brought prominently before the profession of this country by Professor Byford in an address before the American Medical Association at its meeting in 1875, since which time it has been steadily growing in favor until results of numerous observers as collated by Dr. Daniel T. Nelson,

of Chicago, and reported in a paper read before the International Medical Congress at its session in Washington, one year ago, show very favorable results. His tabular summings for 153 cases treated by ergot are as follows: (*a*) hemorrhage, etc., relieved, 50; (*b*) tumor smaller, 61; (*c*) tumor absorbed or expelled, 79; (*d*) tumor not affected, 2; (*e*) died from tumor directly, 6; (*f*) died from tumor indirectly, 5. 79 cases of cure with 61 symptomatically cured, making due allowance for all errors of diagnosis out of 153 cases treated, should make us pause ere we lift the knife over the victim, and at least try the *blasted* medicine. Ergot can be very effectually used as an antecedent to surgical interference, as the following case will illustrate:

"A lady presented herself to me for treatment with a large submucous fibroid presenting at the os. Fluid extract of ergot given in half-drachm doses, three times a day, brought on strong uterine contractions, which, in one week's time, extruded the tumor through the os. It was developed in the posterior wall of the uterus.

Enucleation was easily performed by means of a Thomas saw-spoon and the index finger. The tumor was as large as an average cocoanut, but of ovoid form. Patient recovered without a bad symptom.

The treatment of fibroids by electricity has recently received great impetus by the experiments of Apostoli, of France, and his followers in this country. My experience is limited to a single case:

Miss S., German, never pregnant, fifty-two years old, has suffered a good deal of pain with each menstrual flux, which has been irregular for the past two years. At first examination, July 11th, found a hard, irregular tumor rising above the umbilicus. Began treatment on day of first examination, and repeated it twice each week, for twelve treatments, each treatment lasting twenty minutes. Apparatus used was an eighteen-cell McIntosh battery; number of cells used varied from ten to eighteen, making the tolerance of the patient the measure of the dose. An olive-tipped insulated electrode was introduced into the uterine cavity, which is six inches in depth; this electrode was attached to the negative pole, the positive was applied over the abdomen. The tumor is rapidly diminishing, and is now about the size of a man's fist.

We cannot discuss this treatment at length, but merely say that the success to the present engenders great hopes for the future. The treatment is safe, and with proper apparatus is easily applied. The physician who would resort to a more dangerous operation with the knife, before trying this remedy might almost be called criminal.

HEART FAILURE IN THE PUERPERIUM.

By THOMAS LOTHROP, M.D.,
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The physiological activities of the system under the stimulus of pregnancy are among the interesting phenomena observed in the female economy as a result of the important office of reproduction. It may be stated that every organ, tissue, and fluid undergoes a physiological hypertrophy, in response to the life instilled into the system through impregnation, by the increase of vital force required to enable it to meet its new duties. As a consequence of this new life, we observe an increase of arterial and also of nerve tension, the general circulation and the nerve centres feeling the influence of the inspiration of the special office of reproduction for which the female organization is preëminently fitted. These conditions arise from the absolute necessities of the system.

The maintenance of a healthy equilibrium in the various organs and functions of the body under this increased strain, implies a certain amount of physical vigor, without which the system may deviate from a normal or healthy course and morbid conditions supervene.

The entire process of utero-gestation is an experiment of nature, in which the system is worked under high pressure. If the physical forces are normal in amount and no extraordinary conditions arise from external sources, parturition and a healthy puerperium will triumphantly vindicate the conservative powers of nature in their new environment. An enfeebled constitution or a weak organ, which would bear its burden or perform its work in the unimpregnated woman, may reveal defects which, with the overstrain of pregnancy, will pass the borderland of physiology into the domain of pathology. Many of the diseases of gestation are, therefore, exaggerations of physiological processes. The transitions from the normal to morbid states are easy.

Fatal results will often follow from this change, only thwarted by the jealous care with which nature guards the great office of reproduction in the animal economy. These important principles have been tersely formulated by Robert Barnes, as follows: "Since in pregnancy every organ in the whole organism is especially weighted, undergoing extraordinary developmental and functional activity, so any defect or fault, inherited or acquired, however latent, will be liable to be evolved or intensified under the trial. Hence, pregnancy is the great test of bodily soundness."

Among the organs which feel the impulse and burdens of pregnancy the heart is especially prominent. The increased nerve force, the augmented blood supply, the activities of nutrition, impose greater duties upon the central organ of the circulation. The heart is taxed to increased exertion through the fulness of the arterial and venous system, and its action is augmented in force and frequency. Post-mortem examination of women dying in pregnancy or soon after parturition, determines that the left ventricle is hypertrophied, its walls being thickened by at least a fourth, while the right auricle and ventricle are the same as in the unimpregnated condition. The hypertrophy of the uterus and the heart are coincident as to time though not in degree. Further investigations reveal the fact that the heart increases in weight by at least an ounce during utero-gestation.

These anatomical changes, which supervene as a consequence of pregnancy, are pertinent to the conditions of heart failure we have under consideration, and lead to the causes of this important and serious complication of the puerperal period. The influence of the nervous system in the causation, of this condition forms an important factor in estimating the sum total of causes and the effects following. It has occurred in the experience of every obstetrician that shock after the parturient effort is completed, primarily involving the nerve centres, and, secondarily, the heart and circulation, may bring the patient to the verge of death, and in rare cases to death itself.

These important principles may be more clearly illustrated by the citation of cases than by further discussion.

Case I.—Mrs. W., aged thirty-two years, primipara. Prior to marriage served many years in teaching in the high schools and academies of this State. She was of a nervous temperament and spare in body. Except in the usual exaggerations of nervous phenomena, her pregnancy was unat-

tended by any unusual symptoms. The labor was protracted, the period of dilatation occupying fourteen hours, and when completed the head engaged, and failed, after two hours of severe uterine contractions, to make any advances. The general strength failing, it was determined to apply the forceps, full anesthesia by chloroform being produced. The fetus was delivered without any unusual traction, the placenta was expelled, and the patient recovered from the chloroform narcosis. The usual ablutions of person and change of bed linen were made, and at the expiration of an hour the patient was considered as comfortable as could be expected after an instrumental labor. At the end of two hours symptoms of severe prostration were observed, the pulse was weak and frequent, and the system showed the usual symptoms of severe shock, from which she rallied in three or four days, and her convalescence though slow progressed to a full restoration of her physical powers. Three subsequent labors in the same patient, at intervals of about two years, were normal and unattended by any unusual symptoms.

CASE II.—This was a case of heart failure in a constitution not naturally vigorous, and enfeebled by the enervating influences of school life. Mrs. V., aged twenty-eight, gave birth to a son February 7, 1887. Her marriage followed soon after graduation at the high school. She had suffered from malaria for many months, and aborted at three months from inability to bear the increased burden imposed by pregnancy. These causes led to the usual effect of general enfeeblement during the pregnancy which followed; her system was again burdened with a load quite beyond its capacity, although, with unusual care, the pregnancy continued to full term. For two or three days after parturition the system felt the influence of the physiological rest following delivery, and the hope was entertained that there was recuperative power sufficient to maintain a normal puerperal convalescence. On the fourth day the pulse became weak and frequent, the temperature continued normal, lactation partially inaugurated, no evidence of pelvic or peritoneal inflammation was present nor of septic infection. The patient presented all the symptoms of asthenia, with general exhaustion and heart failure, but, in spite of the most judicious and energetic treatment, death ensued on the sixth day after delivery.

CASE III.—Mrs. S., aged thirty-two years, a woman of remarkable energy and business ability, conducting with success a hardware store in a neighboring village with the tact and shrewdness worthy of the stronger sex, married in December, 1886. In March, menstrual period was passed over, and the usual nausea on rising in the morning plainly indicated impregnation. The few months following she manifested a peculiar restlessness which could only be satiated by travelling from place to place, without having the desired relief, and then returning to her home and friends. Insomnia ensued, although utero-gestation went on uninterruptedly. Approaching the completion of the eighth month of pregnancy, she was taken with a violent attack of vomiting, which resisting all the measures employed by her medical attendant, I was summoned in consultation November 4th. The general condition of the system was fairly good, the pulse and temperature being nearly or quite normal. By removing all treatment from the stomach to the rectum, into

which were introduced efficient medicaments and nutriments, the condition was improved, the nausea and vomiting being allayed. The following Monday, November 7th, labor-pains came on at 8 A. M., and at 10.30 she was delivered of a premature stillborn child. The labor was comparatively easy and normal, and the condition of the patient was considered comfortable, giving fair indication of a successful issue of her convalescence. The medical attendant, on visiting the patient at 2 P. M., found a condition of alarming prostration, with pulse of 130 and temperature 99 5° and great restlessness, but no pain or tenderness in the hypogastric region. I reached the house at 7 P. M.; pulse 160, temperature 102°, no pain or tenderness, lochial discharge moderate. Desiring to remove every source of danger, and fearing that pyrexia might be the result of sepsis, the uterine cavity was irrigated with a sublimated solution. Stimulants, nutriments, digitalis infusion, every measure instituted to assist nature in rallying, were without effect, the patient dying at 11.30 P. M., thirteen hours after delivery.

I am permitted to record the following interesting case, visited in consultation with Dr. C. C. Frederick, of Buffalo.

CASE IV.—Mrs. H., aged thirty years, who inherited a highly neurotic temperament, had been married six years, during which time she was pregnant five times, four of which were carried to full term, and one to seven months. As a consequence of these excessive burdens on her physical and nervous forces, there were developed the following neuroses, viz.: asthenopia, neuralgia, insomnia, cardiac palpitation, dyspnea, intestinal flatus, nervous dyspepsia, and vaso-motor disturbances indicated by hot and cold flushes, flushing of face, and fulness of head. One or more of these nervous disturbances were present at all times, and they were intensified in pregnancy. November 7, 1887, she was delivered of her fifth child at term. During the last half of this pregnancy she suffered greatly from shortness of breath and a very rapid pulse. The heart-beat was uniformly over 100 per minute, and often 120. Physical examination revealed no valvular or other organic disease of the heart, and a careful urinalysis failed to show any renal disease. She was melancholic and solicitous as to the result of her condition. The labor was easy and uneventful. The heart-beat after labor was 120. Her condition otherwise gave no indication of impending danger until the expiration of five days, when suddenly there was developed a paroxysm of cardiac dyspnea. Further examination revealed no organic cardiac lesion, albumen was present in the urine, and microscopic examination showed hyaline tube-casts. From this time to the tenth day the dyspnea was not so severe, but the patient experienced constantly about the chest a sensation of pressure which made her apprehensive of another paroxysm of dyspnea. On the eighteenth day after labor a pneumonia developed in the posterior portion of the lower lobe of the right lung. Previous to this new development the temperature had not been above normal, and, with this alarming complication, it rose to 101°. It ranged for five days at about 100°. Concurrent with the decline of the pulmonary en-

gorgement there developed anasarca of the lower extremities, with a decrease in the amount of urine voided and a proportionate increase of albumen present. The microscope revealed hyaline, granular, and fatty casts. On the nineteenth day there ensued entire suppression of urine, followed by coma, with brief lucid intervals, during which occurred convulsive seizures. On the nineteenth day after labor the patient died. No autopsy was permitted. In the treatment all the cardiac stimulants were used, but the best results were obtained from digitalis.

CASE V.—Mrs. L., residing in Buffalo, aged thirty-eight years, third pregnancy; sac ruptured October 19th, and the liquor amnii gradually drained away. Labor-pains came on October 22d, and a female child fully developed was born after a labor of three or four hours. During the four days following, the pulse and temperature were normal. The superventiion of lactation failed to disturb the vascular or nervous equilibrium; the strictest antisepsis was observed in the labor and the subsequent treatment of the case. On Thursday, the fifth day after labor, the pulse was 160, temperature normal, with the most alarming prostration. There was no dyspnea; careful examination failed to reveal any abnormal heart murmurs.

Diagnosis: heart failure. Alcoholic stimulants, digitalis and morphia, and nutrients were ordered. The patient's condition so far improved that by November 27th she was able to attend to her ordinary domestic duties. Leaving the city for a brief period, the patient was instructed to call in Prof. John Cronyn in case of a relapse. November 22d, severe dyspnea, a small and weak pulse and cyanosis came on suddenly, with hemiplegia of the right side; aphasia was also present. Prof. Cronyn assumed charge of the case and diagnosticated embolism. November 29th, on my return, the patient was somewhat improved, though the paralysis of side and the difficulty in articulation continued. During the month of December there was little or no change in her condition, and it became plain that life would not be prolonged. On the night of January 15th, awaking from a deep sleep, the patient called for a drink, turned over on the left side and expired, a victim to that rare disease, puerperal embolism.

It is an interesting question whether the first attack on the fifth day after labor was due to heart failure, and the subsequent attack of cardiac dyspnea, which occurred November 22d, the sequence of that attack, or whether the primary cause was due to a vegetation dislodged and giving rise to alarming symptoms and subsequently to the embolism. The previous history of the patient gives no clew to the cause. There was no antecedent rheumatism, and the most careful examination of the heart furnished no evidence of a cardiac lesion. There were no symptoms of a local arteritis, nor of the presence of any of the waste stuff, from the involution of the uterus, in the circulation.

The symptoms pointed at first to heart failure, and then to em-

bolism the result of heart failure. An autopsy was not permitted, and hence in reporting the case the writer must base his opinion upon the result of the most rigid examination made in the earlier days of the puerperal period, and regard the subsequent developments as a secondary result, rather than the primary cause.

The cases here reported unfold an interesting field of inquiry, clinically as well as pathologically. It is not claimed that the central organ of the circulation was alone the prime factor in the series of morbid phenomena which led to the fatal issue. The general health of the patients prior to impregnation should be considered in estimating the cause of death. The supervention of pregnancy in an organism enfeebled in its vital forces or burdened to the full extent of, or beyond, its powers of endurance, constitutes an additional element. The augmented vascular and nerve tension accompanying utero-gestation becomes an over-strain to which the heart succumbs, and we have death by heart failure. Another factor in this problem should be considered in this connection. Following the completion of the parturient effort, the vascular and nerve forces are lowered, and the state of the system and the physiological and pathological phenomena which follow during the puerperal period partake of these characteristics. It is impossible to define with mathematical exactness the influence of these known elements in the cases above reported. The failure of the circulation and the decadence of the powers of life so soon after parturition, without any of the recognizable morbid conditions to which the failing powers could be attributed, are convincing arguments that the puerperium is, more frequently than has been acknowledged by our best authorities, the period in which the heart fails to perform its duties with its wonted vigor and strength, and it often succumbs after the sudden cessation of the gestation.

Other pathological phenomena observed in the parturient woman confirm the opinions here set forth. Partial, complete, and even fatal syncope is not infrequently met with, and the degree of severity can be estimated by the previous condition of the patient, or by some unusual or unnecessary exertion, as rising from a recumbent to a sitting position, to which change the heart is unequal. Here is sudden heart failure without the subsequent symptoms detailed in the cases reported, but with like antecedent causes.

The term over-strain has been employed in this paper. An ex-

planation of its meaning in connection with the subject under consideration will not be irrelevant. We think that pregnancy and the conditions of the system accompanying this process sometimes impose a greater work upon the heart than it can perform. It lacks the strength and vital power to meet the duties of its environment. This vigor may have been exhausted by disease, or by overwork, or it may have been congenitally deficient. During the expulsive period of labor the auxiliary forces are brought into action. The abdominal muscles aid in the process of expulsion. The respiration, through a prolonged inspiratory effort, is more or less interfered with, and the heart feels the influence of the impeded pulmonary circulation. A like condition is observed in children during the severe paroxysms of whooping-cough, when the heart almost fails in its action and cardiac asthenia and bronchitis follow. Valvular disease often results from this over-strain. The progressive development of the uterus encroaches upon the abdominal cavity, when its viscera are more or less displaced and their functions interfered with. The pressure of this large organ, with its embryonic contents, is felt by the abdominal aorta and the vena cava. Organic changes in the valves of the heart may often be traced to this source.

Nature provides many compensating avenues to relieve the abdominal cavity of the encroachments which pregnancy imposes, but every parturient woman has not the inherent vigor to assist these influences and forces. Some will yield, and heart failure will occasionally exemplify the fact that nature is unequal to her new duties.

It is a source of regret that post-mortem examinations in the fatal cases here reported were not permitted. Other lesions might have been discovered and more light thrown upon them. It is acknowledged that herein the record is defective. The tenderness toward the dead entertained by surviving relatives, is often a hindrance to a thorough analysis of the causes leading to the fatal issue. It is hoped this imperfect contribution to a subject full of professional interest, may direct attention to its importance as a source of danger in the puerperium.

A NEW OPERATION FOR THE REPAIR OF LACERATED PERINEUM.

By BERNARD BURNS, M.D.,
ALLEGHENY CITY, PA.

A MOMENT'S reflection upon your part will bear me out in assuming the following deductions: First. That in the "secondary" operation for closure of a prepared perineal rent, all English-speaking surgeons accept and use, as best adapted to the purpose, the *interrupted suture*, whether of virgin silver, iron wire plain or silvered, silk, or silkworm-gut. Second. Their sutures are introduced parallel to the long axis of the tear, beginning at the left lower angle of the freshened surface some distance clear of the margin of the wound and continuing upward. The first suture is introduced either by curved or handled needle, up one side, down the other, and out at a corresponding point on the opposite lip, twisted or tied as the case may be; as many additional sutures as may be required being introduced and secured in a similar manner. Third. That about one case in eight thus operated presents us with a fistula, whether rectal, vaginal, or perineal, that will necessitate a second or even a third operation for its removal, because of the faulty and unscientific method here pursued. And fourth. That antero-posterior traction sutures of whatever kind furnish us with so many instances of failure, that we cannot evade the conclusion that they are *not* the proper suture to secure at the same time a *lateral* coaptation of the surfaces of the wound, and that we must search out other means to that end. Dr. Henry O. Marcy, consciously or unconsciously, leans toward this view, since he recently introduced a sort of "safety-pin" form of closing the rent, which is thus described: "A double pin, made of German silver wire, guage 20–22. The end is bent in a small loop and turned out one-fourth of an inch therefrom, at a right angle; the shaft is two to two and one-half

inches in length, and sharpened like the point of a needle; one-half is introduced from within the vagina outward, quite deep through the lateral connective tissue; the corresponding half of the pin, similarly constructed, is introduced from without inward upon the opposite side, in the same manner, the point of which is caught in the loop of the first part and adjusted without;" he uses two to four pins, as required, and claims good results. I have had no experience in this mode of operating, and am, therefore, not in position to speak authoritatively for or against it; but the length and diameter of the pins, the strong muscular contractions at the distal

Fig. 1.

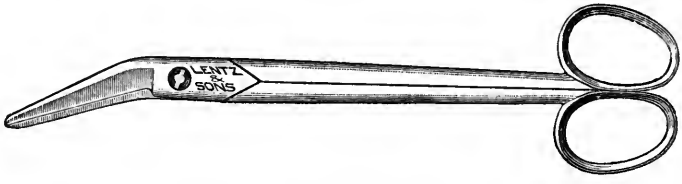


Fig. 2.

Fig. 3.

Fig. 4.

and proximal ends, as well as the absence of support to their middle portions, would suggest to me failure of approximation. The operation I am about to describe to you, while containing some original points, might be properly termed *a composite* perineorrhaphy, since it comprises the best points of many European and American operators. To Dr. Prochownick, of Hamburg, I am indebted for the *tension loop;* to Dr. Werth, of Germany, for the buried suture; and to Prof. Schroeder, of Berlin, for the use, but not the *direction*,

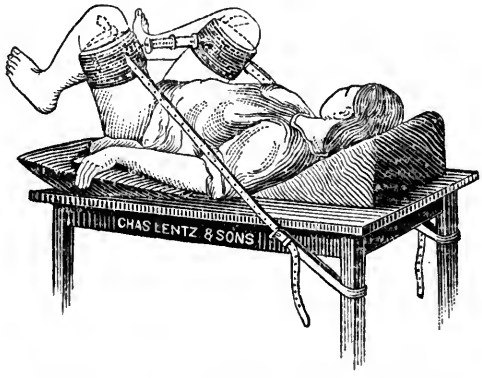
of that suture, in *plastic* operations. Dr. Jenks, of Chicago, was, I believe, the first to dissect up the cicatricial tissue in the floor of the rent, but limited himself to the scissors, and made use of *wire* sutures introduced *transversely*. Dr. Albert H. Smith, of Philadelphia, introduced a dart-shaped knife with double-cutting edges, as a substitute for the scissors, useful where a posterior colporrhaphy is desired, or where there is not an unusual amount of cicatricial tissue, in which latter event the scissors must be employed. He, too, closes abraded surfaces with silver wire.

I have further added to the surgeon's armamentarium by using a long probe-pointed straight bistoury, and adopting Dr. Senger's excellent idea of keeping the patient's thighs apart by means of a thigh-brace, which he terms a *Beinhalter*, and which is strapped to the patient's thighs and then to the head of the table when in use, being entirely out of the surgeon's way. Much might be said of the varieties of animal ligature, but I feel that it would be of no avail and only serve to prolong the time of my paper. The moose of North America supplies us now with a *fascia lata* almost as free from fatty matters as that once obtained from the American buffalo. The tail of the Australian kangaroo, however, contains a fibre almost unbroken by fat globules and is much to be preferred where attainable; but as most of us are so situated as to be obliged to accept the commercial article, we can at least guard against infection by keeping a quantity on hand, in juniper oil.

In perineorrhaphy the choice of an anesthetic is of prime importance, and many unpleasant experiences have confirmed me in the belief that chloroform should be the means most resorted to of procuring narcosis. Antisepsis here, should be as thorough as in laparatomy; assistants, nurse, and operator should scrub to the elbows with soap and brush, after which a sublimated lotion of 1 : 2000 should be applied to the same parts. All instruments and sponges should be immersed in a solution of 1 : 500 carbolic acid. The patient, whose bowels have been well cleared out the day before, receives a cup of beef-tea or milk; is chloroformed in an ante-room and brought to the operating-table, in a room previously sterilized. She is placed in a lithotomy position, with hips well over the edge of the table, and a Senger's Beinhalter adjusted. The labia are soaped, scrubbed, shaved of hair, and douched with ether. A small pledget of absorbent cotton mops off any fatty or putrescent substances

that may have escaped the former washings. A tension loop of silk, rather heavy, is introduced into the floor of the vagina, about the apex of the angle of the intended denudation and given into

Fig. 5.



Senger's Beinhalter adjusted for operation.

the care of an assistant with instructions to keep it tense during the decission and subsequent sewing. The operator introduces the index finger of his left hand into the rectum, more for the purpose of a guide in cutting and sewing, than for the purpose of elevating the parts; an assistant at either side draws back the labia; a small transverse incision is made in the median line, and the proximal margin of the tissue is seized by a pair of tissue forceps which is held taut by one of the assistants; a small bisecting knife is pushed rapidly forward, keeping well to the vaginal surface with its point, until the apex of the triangle is reached. A straight probe-pointed bistoury is then introduced and swept first to one side and then the other as if pivoted to the point of entrance; a small triangular space in either outside angle will be left, which can be subsequently dissected off so as to admit of accurate approximation. Now take an ordinary scalpel and draw a curvilinear from one crus of the angle around to the other, keeping all the while just beyond the mucous edge. Next draw the scalpel from the tension loop, down one side to meet the curvilinear incision, then down the other, and your flap lifts out.

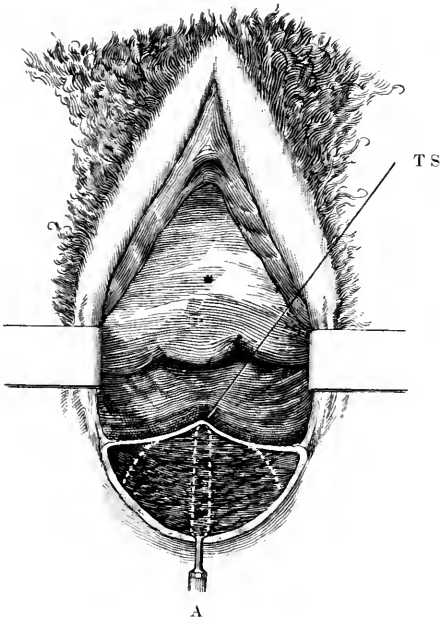
The result is, you have succeeded in denuding the entire surface without a particle of hemorrhage to obscure the field of operation.

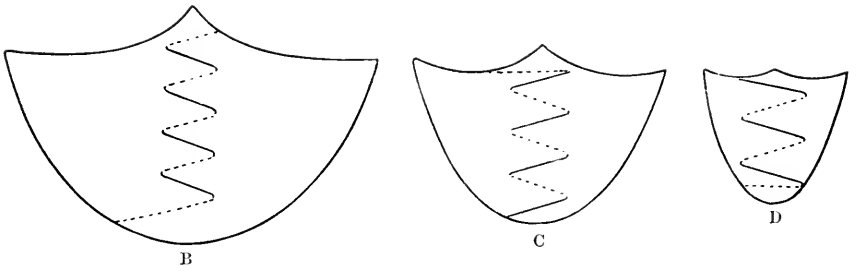
A touch of ether over this raw surface will arrest even a free capillary hemorrhage. After a moment's delay, take a Hagedorn needle, armed with junipered animal ligature, and insert it first in the upper *deep* angle of the wound of the patient's left side; go as deeply into the muscles of the parts as permissible, without wounding any of the adjacent vessels; pass the needle *obliquely* across to the opposite side, pick up as much tissue there and come out into the bottom of the wound with about three-eighths of an inch of the tissues threaded upon your needle. Let the operator who controls the tension loops now seize the sewing suture and, following you, keep up a moderate tension upon the parts approximated; thus you proceed, suture after suture, obliquely placed, keeping always in the bottom of the wound until the outer inferior surface is reached; now having emerged upon the right labium, carry the needle directly across to the left, take one oblique stitch as before, and proceed up the vagina in the same manner as coming down, with the exception that the line of stitching is reversed, and the completed double row appears like what is known in the arts as a "herring-bone."

ADJUSTMENT.—In approaching the upper angle or point of bifurcation within the vagina, it will usually be found that two rows of suturing will sufficiently approximate the shallow depths, to bring the apex to a level with the floor of the vagina; then simply introduce the return suture directly transverse to the emerging one, but oblique in its deep directions, and so continue approximating vaginal and perineal surfaces until the entire rent is closed. Dust the surface with iodoform, place three or four reduplications of iodoform gauze over all and retire the patient to the convalescent ward privileged to void urine at will; in twelve days the sutures will be absorbed and the patient cured. My object in passing these sutures obliquely is to overcome an objection that has heretofore beset this operation, namely, an antero-posterior union has been secured without that lateral consolidation so essential to a compact perineal body. In so placing the sutures, the pelvic fascia and muscles are brought into perfect apposition better, I think, than by a single strand of silver wire at three-eighths and half inch intervals. In tears of the rectal sphincter, the suture tract is through the longest transverse diameter of the external sphincter; in tears of the levator ani, the same argument holds good, and by what process of sewing can be secured

so good an apposition of perineal fascias, as by a form of suturing that cannot possibly miss their severed edges? Again, we are where all true surgeons delight to be, in the bottom of the wound—*always;* no possible pus-pocket can form along our wound tract from a *secreted* blood-clot; we close as we go, and thereby shut out the sneak thief, who so often jeopardizes the success of interrupted suture operators. The after-treatment must be very carefully attended to, no straining at stool permitted until the case has passed out of your hands, say three and a half to four weeks. I usually have the nurse pass a suppository of fifteen grains of insp. fel. bovinus on the evening of the fourth day, and administer a copious injection of tepid water upon the following morning, and every third day thereafter; this is repeated until three and a half to four weeks have elapsed, when she is discharged with full directions regarding the importance of keeping her bowels soluble.

The causes of lacerated perineum; the various modes resorted to to save the perineum from the injuries attending childbirth; the prolapse of pelvic contents; anatomical relations, and associate conditions I have not touched upon, for the reason that the fiend with a new perineal operation and he with a new pessary, are equally contemned by the profession.





A. Knife inserted under perineal cicatrix.

T S. Tension Suture.

B. First row of sutures inserted.

C. Second row of sutures inserted; first row closed.

D. Third row of sutures inserted; second row closed.

EXTRA-UTERINE PREGNANCY.

A DISCUSSION.

I. Its Pathology.

By FRANKLIN TOWNSEND, M.D.,
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Mr. President and Fellows: In beginning the discussion upon so important a subject as that of extra-uterine pregnancy, I am not unmindful of the necessarily limited time each one has at his disposal, and, therefore, have attempted to condense, so far as possible, that portion of the subject—its pathology—which I have been invited to present. Indeed, much of interest has been already published, both of a theoretical as well as of a practical nature, but it is to be regretted that in all this wealth of literature reference to results from broad studies in comparative anatomy is but scanty.

What a field would this topic place at the disposal of him who might care to unravel these hidden mysteries, in seeking out the analogy between man and the lower animals!

In tracing out pathological conditions we should of necessity refer to histology and physiology, for without these scientific aids to our study we lose sight of the finer shades of beginning morbid processes as differentiated from absolutely normal ones.

From deductions like these then, we should begin our study of the pathology of ectopic gestation, by comprehending the physiological functions of the organs most intimately involved. We should, therefore, know primarily the functions of the Fallopian tubes and ovaries; and, lastly, we are to deduce from such knowledge the physiological processes by which the ovum becomes fecundated, as well as the site of its fecundation. The pathological processes following may then, I think, be more distinctly and definitely traced.

Function of Tubes.—Most authorities are agreed that the functions of the tubes are: First, to transmit the ovum from the ovary to the uterus; and, Second, to permit the passage of the spermatozoa from the uterus in the direction of the ovary. There are a few, and the best of authorities too, who differ from this view, as will be presently shown.

Physiology of Impregnation of the Ovum.—The seat of contact between ovum and spermatozoon has not as yet been determined with absolute certainty. "But in all probability it occurs generally in the ovary itself, or in the vicinity of the Fallopian tubes, seeing that in mammalia after intercourse has taken place the surface of the ovaries is generally covered with spermatozoids." (Bischoff.)

Hermann ascribes to the peculiar movements of the tubes (peristaltic) in the direction of the ovaries, as have been observed to occur in the lower animals, the passage of the spermatozoa through the tubes to the ovaries. (*Human Physiology*, Hermann, 1878.)

"The spermatozoa find their way into the Fallopian tubes, and here (probably in its upper part) come in contact with the ovaries. In the case of some animals impregnation may take place at the ovary itself." This author accounts for the passage of the spermatozoa toward the ovary by: First, their inherent vibratile activity; and, second, by a retrograde peristaltic movement travelling from the uterus along the Fallopian tubes, as has been observed in some animals. (*Text-book of Physiology*, M. Foster, 1885.)

Impregnation of the ovum normally takes place in the tubes, as Gray considers Dr. Allen Thomson has clearly shown. (*Anatomy*, Gray, 1883.)

The place where fertilization of the ovum occurs is either the *ovary* or *Fallopian tube*. Thus the spermatozoa must be able to pass through the tubes to the ovaries, which is probably brought about chiefly by the movements proper to the spermatozoa themselves. "When once the ovum has passed unfertilized into the uterus it is not fertilized in the uterus." (*A Text-book of Human Physiology*, Landois and Sterling, 1886.)

"The usual place for the ovum to meet the spermatozoa, and to be impregnated, is the Fallopian tubes," etc. (Yeo's *Manual of Physiology*, 1888.)

In Prof. John C. Dalton's latest edition of *Human Physiology*

the following statements are found: "The egg, when discharged from the ovary enters the fimbriated extremity of the Fallopian tube and commences its passage toward the uterus." Dalton regards the mechanism as due to the movement of the cilia of the epithelium lining the tube "producing a kind of vortex." He recognizes, also, that the ovum becomes impregnated in the tube. (Dalton's *Human Physiology*, 1882.)

Austin Flint says: "It is probable that the ovum is fecundated either as it enters the Fallopian tube or in the dilated portion near the ovary. (Flint's *Physiology of Man*, 1875.)

"That the spermatozoa make their way toward the ovarium and fecundate the ovum, either before it entirely quits the ovisac or very shortly afterward, appears to be the general rule in regard to the mammalia, and the question naturally arises, 'By what means do they arrive there?'" This author's view in regard to this last question is, that it is due to the inherent power of movement in the spermatozoa. (*Principles of Human Physiology*, Wm. B. Carpenter, 1853.)

Fecundation "usually takes place in the Fallopian tube just outside of the womb." (*A Compend. of Human Physiology*, by Albert P. Brubaker, M.D., 1883.)

"In all instances the spermatozoa make their way by virtue of their vibratile movements," through the whole length of the uterus and "Fallopian tube to the ovary." "It is probable, however, that impregnation generally takes place in the upper part of the Fallopian tube," etc. (*Human Physiology*, Henry Power, 1884.)

Fertilization of the ovum must occur in the Fallopian tube. Chapman speaks of the changes "by which the egg is transformed into the blastodermic vesicle" as appearing "during the passage of the egg through the tube." (*Treatise on Human Physiology*, Henry C. Chapman, 1887.)

It is generally supposed that *it* (the ovum) becomes impregnated by the "sperm cells before it reaches the uterine cavity." "*Where* this takes place exactly cannot for *certainty* be determined; it probably varies, and is possible at any point, as the teachings of extra-uterine pregnancy or gestation show." (*A Manual of Midwifery*, Alfred Meadows, 1876.)

Cazeaux, in his *Theory and Practice of Obstetrics* (Cazeaux and Tarnier, 1886), puts the question as to this point where the ovum

meets the spermatozoon, and says: "Already had the preëxistence of the ovule in the ovary, the occasional occurrence of ovarian and abdominal pregnancies, and the experiments of Nuck and Haighton, which had rendered fecundation impossible, by ligating the Fallopian tubes, tended toward the conclusion that it occurred in the ovary. Still this fact was not actually demonstrated, and it needed the definite proof of finding the spermatozoa on the ovary itself."

"At present there *cannot be a further doubt on this point*, for Bischoff has been fortunate enough *to see them there*," etc. Since that period Wagner and Barry have made similar observations. "Now such results evidently prove that fecundation sometimes takes place in the ovary. But may it not take place also in the tubes? or even in the uterine cavity?"

"After coitus the spermatozoa make their way through the Fallopian tubes to the pelvic cavity. It is possible, therefore, for the ovum to become fecundated in any portion of the route from the ovary to the uterus." In exceptional cases it may, after being impregnated, develop after being arrested in its course of travel, entirely extra-uterine. Such terms as "abdominal pregnancy," "ovarian" and "tubal gestation," simply express the *site* of attachment of the developing ovum, which naturally is ectopic. (Lusk's *Science and Art of Midwifery*, 1882.)

Of this Leishman says: "The ovum is, as has been shown, developed within the ovary in the Graafian vesicle, and what has been observed in the lower animals leads us to conclude, that while yet it occupies that situation, and even before rupture of the vesicle has occurred, impregnation may occur." On rupture of the vesicle the fecundated ovum passes into the infundibulum of the Fallopian tube, thence by the tube into the uterine cavity, where its further development continues or progresses to maturity. (Leishman's *System of Midwifery*, 1873.)

As additional evidence that the spermatozoon reaches even so far as the ovary itself, and fertilizes the ovum, I may only quote from Parry's great work on extra-uterine pregnancy. Parry does not regard it difficult to conceive that the Graafian follicle might rupture and the ovum yet remain; this act at the same time allows of a better opportunity for the spermatozoa to fecundate the egg in its very shell. "When we remember the processes by which the ovum escapes from the Fallopian tube it may occasion no surprise that it

should be sometimes retained, even after rupture of the vesicle of DeGraaf has occurred."

The following is the course of the fertilized ovum in its passage through the uterus: First, Graafian follicle; second, fimbriated end of tube; third, canal of F. tube; fourth, interstitial (tube within uterine wall) portion of F. tube, or horn of uterus. It may be arrested at any point in this course and continue its development (fetal), just as it does in the uterine cavity. (Hart and Barbour *Manual of Gynecology*, Wood's Library, 1883.)

Barnes ascribes two functions to the Fallopian tube: First, to convey liquids and the ovum by the movements of the cilia covering the epithelial cells of the mucous membrane to the cavity of the uterus. Second, to receive and transmit toward the ovary the spermatozoa of the male. The uterus is regarded by this author as being a thick, hollow, muscular organ, "destined to receive the fecundated ovum," etc.

Coste's observations seem to prove that fecundation is almost always effected either upon the ovary or in the part of the tube nearest the fimbriated extremity, inasmuch as he maintains that the ovule spoils very quickly when it enters the tube without previous fecundation. His views regarding the course of the spermatozoa reaching the ovum are: First, owing to the movements of the uterus and tube, following the direction from the vagina toward the ovary; and, second, to the inherent power of the spermatozoa themselves.

"The statement that impregnation takes place before the ovum has reached the true uterus, seems to me to be an assumption based upon insufficient evidence; indeed, upon no evidence at all. *A priori*, we may safely say that, if it is the rule, Fallopian pregnancies and the disasters which follow them ought to be much more common than they are, and I believe it to be more than likely that the real cause of this accident is the coincidence of a set of circumstances, the most important of which is the destruction or insufficiency of the ciliary movement." (*Diseases of Women*, Tait, Wood's Library, 1879.)

That the uterus is the "meeting-place of the ovum and spermatozoa" is a theory held by Dr. Wyder, and is certainly opposed to the views as just quoted by the most eminent of German, English, and American physiologists, gynecologists, and obstetricians. Wyder regards the appearance of the cilia on the uterine mucosa at

puberty, and their action from without inward as indicating that they are intended to assist the progress of the spermatozoa, while they prevent the too rapid descent of the ovum toward the cervix. The cilia covering the mucous membrane of the tubes, which are present from birth, move in a direction directly opposite; and this movement, taken in conjunction with the peristaltic motion of the tubes themselves, also in the direction of the uterus, as well as the sinuosity of their passages, tends seriously to retard the advancement of the spermatozoa, notwithstanding their inherent power of motion. (*The Medical News*, Vol. 49, Phila., 1886.)

Regarding the function of the tubes and ovaries, Mr. Tait has proven conclusively to my mind that ovulation can and *does* take place before, during, and even after menstruation ceases (menopause); also, that the changes in the ovary at puberty are simply vascular, and that those in the tubes at this period are vascular, muscular, and epithelial, and that the change of *greatest* importance is in the functional movement of these accessory organs—that is, the "grasping," so to speak, of the ovary by the fimbriated extremity of the tube *at only stated times*, viz., *during the menstrual epoch.* Ovulation and menstruation, then, are not necessarily coincident, for, as Tait, Jackson, and myself have shown, it is not always that the passage of an ovum takes place through the tube, though its fimbriated extremity *is* grasping the ovary, since it frequently happens at such time that there is *no ripe ovisac present.*

If, then, as has been shown, ovulation continues intermenstrually, when the tubes are quiescent, the question naturally arises, What becomes of the ovum when the ovisac ruptures? There is only one place it can go, and that is into the peritoneal cavity, where it perishes and is absorbed. Mr. Tait, in speaking on this subject in his work on *Diseases of the Ovaries*, says: "I believe that the ovum falls into and perishes in the peritoneal cavity in by far the greater number of cases, and that the passage of it into the uterus occurs in only a small minority of the ova produced."

Accepting, then, the views of the *majority* of the authorities, that fecundation usually takes place either in the tubes or on the surface of the ovary, or even in the Graafian follicle, or possibly, as has been intimated by Parry, in the peritoneal cavity, and granting the admirable stand taken by Tait, as just dilated upon, it would seem to me that:

1st. Fecundation of the ovum takes place more frequently than is supposed.

2d. That this being a fact, many sterile women—that is, objectively sterile—who never complain of pain or ache, who ovulate and menstruate with the greatest nicety and regularity, and whose general health is perfect—and such, no doubt, all of us present have met with—such women, I say, may frequently have fecundated ova which, like the non-fecundated ova, may drop into the peritoneal cavity and perish, because the soil there is unpropitious for their development.

3d. That occasionally, but rarely I will admit, this same peritoneal soil, if I may be permitted to use such a term, does present a favorable site for the development of the fecundated ovum, and what is called "primary abdominal pregnancy" results.

4th. This propitious site may be due to old peritoneal inflammatory troubles, which may be so slight, indeed, as to have never given rise to suspicion of their existence; such nesting spots in the peritoneum for the development of the young fecundated ovum, though occurring not so frequently as those inflammatory changes in the tubes causing desquamation of the ciliated epithelium, and thereby tubal pregnancy, as Mr. Tait so ably advocates, *are*, nevertheless, to *my* mind, a factor of causation of the so-called "primary abdominal pregnancy."

From the physiological proofs, as already cited, I am convinced that extra-uterine fetation can and does occur either in the Fallopian tubes (by far the most frequent form), *in* the ovary, or *upon* it, and even in the peritoneal cavity; and I must truthfully say, that in the study of any given case of misplaced conception, one of the most perplexing questions to decide is, as to which class it properly belongs: whether tubal, ovarian, or abdominal. This is assuredly true, not only while the patient is living but after her death, and I can heartily endorse the views of Parry, when he says, "that notwithstanding these common and insuperable difficulties which the pathological anatomist may encounter, even under the most favorable circumstances, a large number of physicians do not hesitate to classify their cases, even when their patients have been carrying the products of a misplaced gestation for years. These remarks apply not only to the statements of physicians who have observed only one case, but to those accoucheurs who have seen many. The result

is that special treatises, as well as periodical literature, teem with statements which are decidedly unreliable and calculated to mislead those who attempt investigating this subject."

Tubal Ectopic Gestation.—By far the most frequent form is tubal ectopic gestation, ascribed usually to a number of causes, as catarrh of the mucous membrane, causing possibly a loss of the ciliated epithelium, allowing thereby the fecundated ovum to rest and develop in the denuded spot; flexions of the tubes; and dilatations with hernial pouches, produced by the protrusion of the mucous membrane through separate bundles of the muscular fibers (Lusk). Constrictions from inflammatory changes causing adhesions, obstructive catarrh, physiological aberrations, or even paralysis, etc., have all been assigned as factors.

Naturally the pathological changes taking place will vary according to the duration and behavior of the pregnancy. As the growth of the ovum continues, the mucous membrane of the tube thickens, the tubes themselves gradually distend, the villi enter into the mucous membrane, and, according to Bandl, "the two poles of the decidua-like covering are closed, though sometimes the uterine end remains open and in continuity with the mucous membrane of the tube and the decidua of the uterine cavity." Hennig remarks that a decidua reflexa is rare.

The villi continue in their growth, penetrating the mucous membrane to the muscular layer, but, according to Leopold, never breaking through the walls of the maternal vessels; nor are any evidences of blood to be found, as is presumed to exist in intra-uterine development, between the villi. The vascularity of the vessels of the tubes and those of the broad ligament in which they lie is greatly increased, the muscular fibres of the tubes, enlarging at first, subsequently become markedly thin by stretching from the continued and increasing pressure due to the growth of the ovum, which finally ruptures the tube, usually between the second and third months. According to Mr. Tait, the most common seat of rupture is through the surface of the tube into the cavity of the peritoneum, because, as he says, "the proportion of the circumference of the tube which is covered by peritoneum is very much greater than the proportion of the circumference of the tube which is related to what is called the cavity of the broad ligament." As a result of such tubal ruptures the placenta is frequently lacerated

and the hemorrhage excessive which pours into the peritoneal cavity, death being frequently due to shock, hemorrhage, or, if not from either of these, purulent peritonitis is apt to develop.

Associated with the rupture in the wall of the tube may be that of the ovum, with the escape of the fetus into the peritoneal cavity, or, it may be that the ovum remains *whole*, and in *such* condition falls into the abdominal cavity. Should the ovum, though, remain in the tubes, which is rare indeed and most favorable, the extent of the hemorrhage may be lessened. Spiegelberg mentions three instances where this form of extra-uterine pregnancy advanced to full term, and Hofmeier still another. In all three cases the enormous muscular development in the tubal walls was characteristic. Fatal as this form of ectopic gestation usually is, recovery *may* occur in case of premature death of the fetus before the tube gives way; and even after rupture has taken place recovery is possible, owing to the formation of inflammatory false membrane around the embryo of the entire ovum. Should the tube rupture at any point not involved by the peritoneum, the folds of the broad ligament become separated by the effused blood, forming a cavity, into which the ovum may fall, and either become destroyed or continue developing up to the fourth, fifth or sixth month, when it usually dies. Then we have, according to Tait, "a group of cases in which, after suppuration has taken place, the bones of the fetus are discharged through the rectum, through the bladder, or through Douglas's culde-sac into the vagina, or sometimes a lithopedion results. The minority proceed to the full time and are removed either as living or as dead children" from an extra-peritoneal cavity.

Ovarian Pregnancy.—So long ago as the latter part of the seventeenth century, St. Maurice demonstrated a case of ovarian pregnancy. Since that day a number of cases of this very rare condition have been recorded, as those of Granville, Porter, Kammerer, and Bandl, supported by the thorough investigations of Marimus of three preparations found in the Pathological Museum of Wurzburg, which prove unquestionably the presence of gravid ovaries. In Porter's case the woman died from rupture at between the sixth and seventh week of gestation in her fourth pregnancy. The autopsy revealed the left ovary greatly enlarged, *containing the gravid sac*, while the Fallopian tube on the same side was found "*floating free and impervious.*" In ovarian fetation, as is usual, the cyst is void

of a peritoneal investment, the walls of the Graafian follicle and the stroma of the ovary forming the envelope about the developing ovum. The chorion is in intimate relation with the interior of the sac. Subsequent to fecundation the Graafian follicle may close and the ovum continue extra-peritoneal, or the ovum may gradually make its way through the opening occasioned by the escape of the Graafian fluid, and thus come to lie eventually for the most part within the peritoneal cavity. In either case rupture of the sac takes place early, though, when the sac walls are reinforced by inflammatory adhesions to the peritoneal coverings of the adjacent viscera, gestation at full term may be reached.

ABDOMINAL PREGNANCY.—*Primary, Secondary.* As was shown in an earlier part of this paper, ova frequently becoming fecundated, drop into the abdominal cavity and perish, the soil being unpropitious for their further development; occasionally it happens, though, as has been demonstrated, their death is not so imminent, and their growth may continue for an indefinite period. Now, the pathological changes occurring in this form of "primary abdominal pregnancy" must be distinguished from those that take place in that form which is termed "secondary." In the one instance we have so minute, soft, fragile, and delicate a corpuscle deposited in the peritoneal cavity that one could not well imagine any grave inflammatory results accruing from its immediate presence. This being the case then, the contiguous abdominal organs will not be injured by its ulterior development, because, as Cazeaux remarks, they gradually become habituated to it, and the ovule having obtained a right of possession, "lives, grows, and presents to the smooth, polished surfaces which touch it, a surface equally smooth, polished, and moistened at their expense, and not having occasion for any other protecting envelope, no cyst is formed," the ovum being simply surrounded by the chorion and amnion.

On the other hand, in the secondary form of intra-peritoneal pregnancy, we have a voluminous product of conception suddenly thrust upon the peritoneum, accompanied by large quantities of blood, wounding possibly, irritating certainly, this membrane so unaccustomed to such harsh intrusion. Here the ovum acts the part of a foreign body, soon determining an acute inflammatory process about it, that possibly may form a cyst wall made up almost wholly of plastic lymph, which completely isolates it from

the rest of the peritoneal cavity. If the fetal cyst ruptures and the contents escape from the amniotic cavity into the midst of the intestinal mass, a renewal of the inflammation occurs and the cyst just described forms around *it*. As a rule, the fetus perishes at, or soon after, the time of rupture; still, there are cases recorded, notably by Bandl, where it continued developing even within a sac formed of proliferating connective tissue. With the death of the child it may be converted into a lithopedion, or, through the blood-supply of the connective tissue, it may be preserved for years in its soft integrity.

In all cases numerous and greatly exaggerated vessels form in the cyst walls, the rupturing of which frequently causes almost instant death from hemorrhage. Sometimes, especially when the pregnancy is prolonged, these walls may become destroyed by perforating fistulous canals, running in various directions, frequently communicating with the intestines, vagina, uterus, bladder, or even with the abdominal parietes, and thus directly into the external world. Through these fistulous channels the skeleton portions of a putrescent fetus frequently find their exit. This change is undoubtedly more frequent than that the fetus should be transformed into osseous or cretaceous substance, or even adipocere. Beside these varieties of extra-uterine fetation, Bandl, as already mentioned, records histories of the coexistence of extra- and intra-uterine pregnancies, "the latter occurring at the same menstrual period as the former, or possibly after the death of the extra-uterine fetus."

Placenta.—In all forms of ectopic gestation the connection between the ovum and the abnormal surface upon which it is engrafted, is established by a vital adhesion between the chorionic villi and the tissues with which they come in contact, plastic material helping to cement them as it were. This has been demonstrated thoroughly by Braxton Hicks and Engelmann. As there is here absence of the decidua, the process differs from that found in the uterus, where the sub-ovula portion (the serotina) performs an important and active part in connecting the ovula and maternal tissues by proliferating cell activity.

The Uterus in Ectopic Gestation.—From researches made by Clark, Oldham, Virchow, Ramsbotham, Cazeaux, Kiwish, Hodge, Hennig, and others, it would seem fair to conclude that the uterus is enlarged even in the early stages of ectopic gestation; that it undergoes changes which are the normal preparatory trans-

formations for the reception of the ovum. A decidua forms in its cavity, which is seldom retained until the completion of gestation. On the contrary, it is usually expelled during the early stages of gestation *en masse*, with pain and symptoms of abortion, or it may be discharged in shreds and pieces without symptoms.

And now, gentlemen, I take pleasure in exhibiting to you a most perfect specimen of a "lithopedion," beside that of the cyst walls which incased it, as well as the uterus and adnexa, all carefully removed (post-mortem) from the abdominal and pelvic cavities of a woman almost thirty-seven years ago. The specimens are the property of the Albany Medical College Museum, Albany, N. Y., and are most interesting and useful in clearly demonstrating the views as already stated in my discussion relative to "Primary Abdominal Pregnancy."

With the specimens I likewise submit a report of the case, as compiled by the late Prof. J. H. Armsby, of Albany, N. Y.

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REPORT OF DR. PARKHURST'S case of extra-uterine conception, by the late DR. ARMSBY, of Albany, N. Y.

"The specimens from which the following illustrations were taken were obtained at a post-mortem examination held by Dr. Parkhurst, in the presence of about twenty persons, upon the body of Mrs. Amos Eddy, aged seventy-seven, of Frankfort, Herkimer County, N. Y. Mrs. Eddy's maiden name was Rebecca Smith. She was born in Frederickstown, Columbia County, N. Y., in 1775, of English parents Her mother, Sarah Smith, gave birth to twenty-four children, of whom four pairs were twins, Rebecca being the twelfth child. Mrs. Eddy was married in New Lebanon, Columbia County, N. Y., in 1795, at the age of twenty, and removed with her husband, Amos Eddy, to Frankfort, Herkimer County, N. Y., where they both lived and died, he at the age of seventy and she at seventy-seven. She became pregnant in 1802, seven years after her marriage, and died in 1852, carrying this fetus fifty years.

"No unusual symptoms attended her pregnancy; the catamenia ceased; quickening was felt at the usual time, and the motions of the child increased with its growth.

"At the expiration of eight and a half months she had severe labor pains following a sudden fright from the falling of a vessel into the fire, while she was engaged in cooking. Her physician, Dr. Farewell, of Litchfield, was called; the labor pains continued for several hours with regularity and force, but at length subsided and she remained comfortable for two or three weeks. Her health then began to decline, and the full period of pregnancy having passed by, her friends became extremely anxious and availed themselves of the advice of Drs. Guiteau, Hull, Coventry, White, and others. For a considerable time she was confined to her bed, and, after a year and a half of extreme suffering, her health began to improve and was finally restored. During the remainder of her life she enjoyed good general health, but suffered occasionally from severe attacks of pain in the abdomen which resembled labor pains. After her health was restored her catamenia returned and continued until the age of forty-five. She travelled much about the country and consulted various medical men, among others the late Prof. Willoughby, of Fairfield Medical College. Her health continued remarkably good up to the time of her death, and at the age of seventy-six she was accustomed to walk five miles from her residence to the village and back again.

"The specimen with its covering cyst (see illustrations) weighed eight pounds at the time of its removal. The external surface of the envelope was smooth and white, composed of concentric layers of fibro-cartilage, varying at different points from a line or two to three-fourths of an inch in thickness. It had no connections with the abdominal viscera or walls but was slightly attached to the Fallopian tubes and omentum. The external surface of the fetus was encrusted with an earthy substance of sufficient thickness to preserve its form when dried. The interior seems to be a soft substance resembling adipocere."

EXPLANATION OF PLATES.

PLATE I.—To the right is the lithopedion—side view.

To the left is an anterior view of the external surface of the walls which encased the fetus made up wholly of inflammatory products.

Lying directly in front of this inflammatory sac is to be seen the uterus with its anterior surface up, the os externum prominent, and, running off from either side, are to be noticed the Fallopian tubes and ovaries; besides, inflammatory bands are adherent to the surface of the sac.

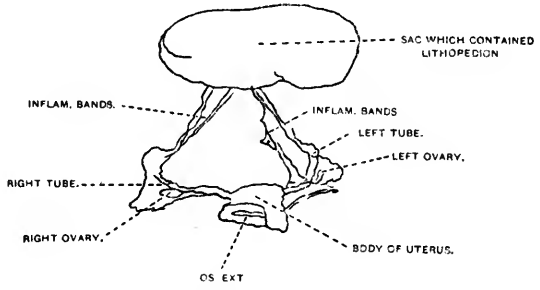
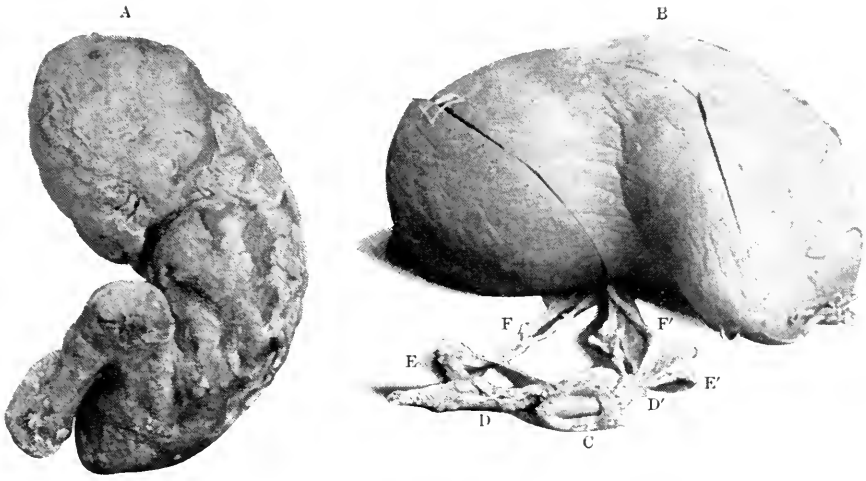


PLATE II.—To the right is the lithopedion—front view.

To the left is a posterior and inferior view of the inflammatory sac which contained the fetus, its walls being broken open when removing it from the abdominal cavity; the thickness of which is to be noted, also the view of the interior of the sac. The shaggy portion shows the large amount of old adhesions from inflammatory deposit.

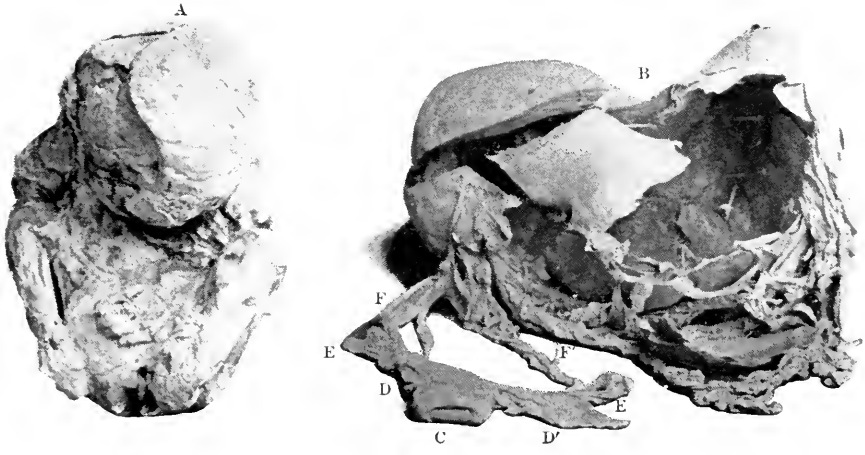
The uterus—posterior surface, with tubes and ovaries—is plainly to be seen.

PLATE I.



A. Lithopedion. Side view.
B. Inflammatory sac of lymph, originally containing Lithopedion. Exterior view.
C. Uterus. Atrophied.
D D′. Fallopian Tubes. Unruptured.
E E′. Ovaries.
F F′. Adhesions of inflammatory lymph.

PLATE II.



A. Lithopedion. Anterior view.
B. Inflammatory lymph sac, originally containing Lithopedion. Interior view.
C. Uterus. Atrophied.
D D′. Fallopian Tubes. Unruptured.
E E′. Ovaries.
F F′. Adhesions.

II. Its Diagnosis.

By JOSEPH PRICE, M.D.,
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In inaugurating the discussion of the diagnosis of extra-uterine pregnancy I desire to be as brief and pointed as possible, and for this reason I have generalized the subject and omitted all allusions to the literature. The literature of extra-uterine pregnancy is scattered through a vast number of periodicals, and consists, for the most part, of descriptions of cases occurring in the practice of the writers. The discussions of Mr. Lawson Tait and the classical work of Dr. John S. Parry have proved of the most value to me.

Accepting, as I do, the proposition of Mr. Tait, that all extra-uterine pregnancies are primarily tubal and that all the so-called varieties depend upon the location of the ovum in the tube and the location of the point of rupture of the tube, I have divided the subject for the sake of the discussion of the diagnosis into three classes: *First*, extra-uterine pregnancy before the rupture of the tube; *second*, at the time of rupture of the tube; and *third*, after the rupture of the tube.

Rupture of the tube is not synonymous with rupture of the fetal sac, for, though rupture of the tube and sac generally occurs at the same time, it sometimes happens that the tube ruptures and the sac remains intact; and this may in part explain the fact that cases sometimes occur in which the tube ruptures without causing exhaustive hemorrhage.

The diagnosis of extra-uterine pregnancy before rupture of the tube is rarely made, and when it is made, is of necessity not positive, because the same set of symptoms may arise from a number of pathological conditions; for example, a retroflexed gravid uterus, an ovarian cyst, a uterine fibroid, and hematosalpinx, have all been mistaken for tubal pregnancy, differential points of diagnosis not being clearly presented. Moreover, the physician rarely sees such cases until rupture has taken place. When such cases are seen

they are generally in patients exceedingly anxious to conceive, who, after a long-continued sterility, have reason to suspect themselves pregnant; or by patients who, having missed one or more menstrual periods, are anxious to know their condition.

The symptoms they present are as follows: *First*, partial or complete cessation of menstruation for one or more periods, generally accompanied by other rational symptoms of pregnancy, though occasionally these are all wanting; *second*, pain which is peculiar, being generally severe, paroxysmal, and long continued—a sickening pelvic pain, which is neither cramp-like nor colicky, though it is often described by these terms—these pains, probably caused by the distention of the tube, are apt to subside for a time only to recur; *third*, the appearance of uterine hemorrhage, which is again peculiar in that it is usually irregular, both as to time and quantity, generally lighter in color than the normal discharge and containing *shreds of tissue* which are portions of the decidua vera.

The occurrence of these symptoms justifies a physical examination, when the general condition of the vagina and cervix may or may not be found to correspond to normal pregnancy. The uterus is generally enlarged and pushed out of place by a tender or exceedingly painful cystic mass, occupying the position of one or the other of the tubes. This cystic mass at this period is freely movable. A differential diagnosis is extremely uncertain, and care must be taken not to exclude pregnancy hastily because of the *apparent* return of catamenia, nor to conclude that *miscarriage has taken place on account of the appearance of tissue* in the discharge, nor to pronounce the trouble some other pelvic tumor while rational symptoms of pregnancy exist in fact. Some of the tumors liable to be mistaken for extra-uterine pregnancy have been mentioned, *and when*, as *sometimes occurs*, the fetus and placenta die before the rupture of the tube, the difficulty of differential diagnosis is *practically insurmountable.*

These symptoms continue as the pregnancy advances. The tumor, as it increases in size, causes additional symptoms by pressure on the bladder and rectum until rupture occurs. Rupture takes place almost always between the eighth and fourteenth weeks of pregnancy—in a majority of cases before the twelfth week. Now, the symptoms vary somewhat, according to the point of rupture in the tube—whether into the peritoneal cavity or below it.

If it takes place into the peritoneal cavity—as on account of the anatomical relations of the tube it is prone to do in a large majority of cases—the symptoms suddenly become most alarming. The patient is seized with agonizing pelvic pain, shows all the symptoms of internal hemorrhage and shock, goes into syncope, collapse and death. That this end is more frequent than is generally supposed is shown by a statement made to me by a well-known pathologist, Dr. Formad, Coroner's physician of Philadelphia, that within a very short period he had found in his post-mortem work eighteen deaths due to ruptured tubal pregnancy—a class of cases which for many years had been grouped as death due to accidental hemorrhage. These deaths all occurred before the twelfth week of pregnancy.

Where death does not immediately supervene the recovery from shock is gradual, the attacks of syncope often recurring. The patient presents an exsanguinated appearance; uterine hemorrhage generally occurs; symptoms of peritonitis, localized or general, make their appearance, and the patient slowly recovers only to undergo another attack of the same kind. A physical examination now may or *may not* disclose *characteristic lesions;* when it does the uterus is found enlarged, displaced and fixed, and a tumor will be found occupying the position of the pregnancy. This examination, however, is often unsatisfactory, for the tube may discharge its contents beyond the reach of the *examining finger;* or the adhesions may so fix the whole vault of the vagina that nothing can be made out. The diagnosis must be made from the history of the case and the condition of the patient. The liability of multiparous women to extra-uterine fetation must be borne in mind, and the occurrence of the above catalogue of symptoms in such a patient must be given immediate and serious consideration.

As has been said, these attacks may be *recurrent*, and it has been demonstrated by operative disclosures that hemorrhage may *cease* entirely for a time only to recur with renewed violence, or may continue in small quantity as long as the patient *has any blood to lose*. If the patient survive thus far, the symptoms of purulent peritonitis or of a more or less severe septicemia set in, when finally death relieves the suffering woman.

When rupture occurs below the peritoneum these symptoms are rarely so severe, and may, indeed, be scarcely noticed by the patient,

the pain of rupture seeming to be only a transitory pang of colic. The hemorrhage is rarely or never fatal at the time of rupture—easily accounted for by the anatomical relations. The syncope, if occurring, is evanescent. The discomfort of bearing-down sensations is frequently complained of, difficulty of micturition and defecation is increased, but the patient recovers power very readily. Here, again, recurrent attacks mark the progress of the case and the ultimate outcome depends on whether the fetal sac is ruptured or not. Examination at this point will reveal a sensation of bogginess and distention in the pelvis—precisely that of a pelvic hematocele and often the body or extremities of the fetus. The symptoms of peritonitis are wanting generally, and if examination be not immediate the distention may in a large measure disappear, not necessarily by reabsorption but by extension through the connective tissue spaces of the pelvis. If the fetal sac has ruptured the fetus dies, and if the condition is not recognized and relieved by operative measures the patient goes into a state of chronic invalidism—the victim of obscure pelvic troubles—until nature relieves her as much as possible by disposing of the misplaced products of the accident. Sometimes the patients recover fair health and comfort.

In a small minority of cases the fetal sac is not ruptured, and now the progress of gestation is similar to the normal until full term, providing a secondary rupture into the peritoneal cavity does not occur. This may occur, and when it does it kills immediately, the symptoms being those of the primary rupture greatly magnified.

After quickening, the doubts of pregnancy are settled and the question is the location of the fetus, whether within or without the the uterus. The metrorrhagic discharge may have ceased by this time, especially so if the entire decidua has been thrown off. The severe paroxysmal pelvic pains may be very infrequent or have ceased altogether. The mammary changes are as in normal pregnancy, but the fetal movements generally cause more discomfort, and are spoken of as being entirely on one side. The fetal heart sounds and the placental bruit are usually intensified, and as the fetal sac enlarges it produces unusually distressing pressure-symptoms on rectum, bladder, and bloodvessels. Physical examination is the only mode of determining the diagnosis. Examination of the abdomen will generally show the fetal tumor decidedly on one side or the other. Occasionally the fetal extremities may be felt very distinctly

and even appear as projections on the abdominal wall. This, however, is of no use unless in conjunction with other more distinctive signs. The fetal sac is generally less movable than the gravid uterus. The fundus uteri can frequently be felt as a distinct mass on the fetal tumor. Vaginal examination shows the uterus enlarged, *but not in proportion to the duration of pregnancy;* generally displaced to one side, in front, or beneath the tumor. The cervix is enlarged and soft as in normal pregnancy, *but not in proportion to the duration of pregnancy.* The cervix is also greatly displaced. The pelvis is filled with the fetal sac, which gives the sensation of fluctuation or of semi-fluctuation, and frequently a part of the fetus may present. The fetus sometimes is so plainly felt as to leave the impression of a presenting part covered only by membrane. This, however, is not peculiar to extra-uterine pregnancy. If the patient carries the extra-uterine gestation to term, spurious labor will take place. It is accompanied by metrorrhagia and sometimes followed by a vaginal discharge resembling the lochia. After this spurious labor the fetus dies and is disposed of in a variety of ways by nature. A discussion of these ways lies outside the province of this paper. I have also purposely omitted any discussion of such grave occurrences as extra-uterine pregnancy occurring in a hernial sac, twin extra-uterine pregnancies, or extra- and intra-uterine pregnancies combined, for the reason that I have desired to make my remarks so general as to leave the way open for a very *full and free discussion.*

III. Its Treatment.

By E. E. MONTGOMERY, M.D.,
PHILADELPHIA, PA.

When asked to take part in this discussion I choose the surgical treatment. While my subsequent study of the subject has not induced me to depreciate the value of surgery, it has caused me to have a higher appreciation than I before held of the possibilities of treatment by electricity. The method and urgency of treatment must, of necessity, depend upon the form of extra-uterine pregnancy we have under consideration.

It is recognized that the ovum may become impregnated and arrested at any point in its progress from the ovary to the uterus; indeed, it may develop in the Graafian follicle, forming a true ovarian pregnancy. The forms recognized are tubal, tubo-uterine or interstitial, tubo-ovarian, ovarian, and abdominal. It will be readily comprehended that these various forms are only distinguishable as such during the early periods of pregnancy. As the ovum grows, and the surrounding tissues become involved, it is difficult to determine in what organ it had its first implantation.

The course of the gestation varies, however, according to the original site. Thus, the tubal variety, owing to the limit to the growth and dilatability of the tube, ruptures from the sixth to the twentieth week, while the ovarian or peritoneal varieties may go to the completion of pregnancy without untoward circumstances.

These forms must, of necessity, present symptoms of a different character. Hence the purely tubal early presents marked and typical symptoms. The first experiences do not differ from those of ordinary pregnancy, such as missed menstruation, nausea, feelings of depression, sleeplessness, swelling of the breasts, etc.; later, we have them complicated by characteristic symptoms, such as pain in the abdomen, in one or other inguinal region, sensation of pressure, attacks of fainting, severe pain occurring in paroxysms, often so acute and

lancinating as to cause the patient to fall, and even render her unconscious. The first attack may be accompanied by symptoms of collapse and internal hemorrhage so marked as to demand immediate laparatomy, or these may occur as frequent attacks during a period of some months. The attack may be accompanied by uterine discharge of a bloody character, leading the patient to believe that it is a return of the ordinary menstruation. An examination of the fluid will usually disclose the presence of a decidual membrane, thrown off either as a cast or in shreds. The presence of this symptom in a woman who has not before suffered from dysmenorrhea is almost a pathognomonic indication of extra-uterine pregnancy. In the other forms the patient may suffer so little distress that she does not mistrust the grave form of the pregnancy. She reaches what she supposes the completion of the pregnancy, when, after a futile attempt at labor, the fetus dies and may undergo one of various forms of retrogression. It may become macerated and disintegrated, causing the formation of an abscess which opens through the abdominal walls, the vagina, the bladder, or the intestinal canal.

Dr. Brown (*Virginia Medical Monthly*, 1884) relates the history of a colored woman who had been married sixteen years without having reason to believe herself pregnant, in whom, after considerable disturbance of the bowels, there was found a bone projecting from the anus. An examination revealed the greater portion of a nearly mature fetal skeleton in the rectum, which, after some difficulty, was removed.

Such an elimination of the fetus may continue over a period of years and the patient subsequently regain good health. In other cases, the influence of the absorption of septic material furnished by the decomposing and macerated fetus may lead to a fatal termination. The fetus may become encysted, or form a lithopedion, which has been carried in rare cases as long as fifty years without producing any unfavorable symptoms. In the peritoneal or abdominal form, the envelope of the fetus is partially composed by the gluing together of the intestinal loops and the viscera of the abdomen in proximity to it. In such cases the symptoms will depend largely upon the site of the placenta. If, in its growth, it becomes attached to the intestines, it generates such a congestion of the intestinal structures as to lead to violent catarrhal symptoms, such as vomiting and

purging, frequently recurring, severe intestinal pains. The only relief is in the arrest of the vitality of the ovum.

In the tubal varieties early rupture is the most frequent result. This may occur suddenly with the first attack of pain experienced, or there may be a number of attacks to warn patient and physician of the impending danger. In the interstitial form the rupture may occur either into the uterine canal or the abdominal cavity. Indeed, cases have occurred in which the rupture has taken place into both simultaneously, as in the case described by Maschka, in which the autopsy upon the body of a servant girl disclosed the head of the child and the placenta in the abdomen, while the body was found secreted in the room. The rupture of the tube is usually accompanied by profound shock, symptoms of collapse, and internal hemorrhage. A number of cases are upon record in which the shock of rupture was so great as to render the patient unconscious, and to lead to an immediately fatal termination. In other cases, where death is not immediate, the hemorrhage is not arrested and results fatally.

As the various forms of the disease present such a variety of symptoms, we can readily understand that our treatment must depend somewhat upon the form with which we are confronted.

As we have seen, from an investigation of the literature, that the more or less matured fetus may become encysted or form a lithopedion, producing little or no disturbance during a long period of years, we are justified in hoping that a plan of procedure may be advanced by which the vitality of the ovum may be arrested in its earlier stages, when its products are of such a character as will admit of being readily absorbed and eliminated. To accomplish this end various procedures, such as puncturing the cyst and the injection of morphia, have been practised. These methods are either uncertain or attended with more or less danger. Electricity, however, affords an agent for the destruction of fetal life, which experience discloses can be relied upon for the arrest of development and the speedy and safe cure of our patients. I am aware that in entering upon the discussion of this procedure I am advancing upon a field that has been fiercely debated; but, in the decision of the value of this agent, we cannot accept the dicta of men who are ignorant of the manner in which it is used, or of those who condemn it without a trial. An agent which is capable of arresting the life of mice and insects by passing a charge through a vessel of water in which they

have been placed, as shown by the experiments of Landis, should be effective in destroying fetal life when brought in close contact with the fetal envelope. Its method of action is not electrolytic—the proper method of use is not by puncture. The ovum is brought within the circuit of a faradic current by placing one pole over the abdomen and the other against the sac, either in the vagina or rectum as may be most convenient, and a current employed as strong as can be comfortably borne for ten or fifteen minutes. This should be repeated once or twice daily for several days. Usually from two to five applications are sufficient to accomplish the arrest of development.

Naturally, among those who would discredit the efficacy of this agent the correctness of the diagnosis is questioned. It is possible that, in some of the reported cases of cure by electricity, the operators may have been at fault as to the condition. But it is not probable that in a large series of cases, many of them seen by several men of unexcelled prominence and experience in the diagnosis and treatment of abdominal and pelvic troubles, an error should have been made in every case. If it would prove successful in one case, there is no reason why it should not in many. The abdominal surgeon meets us with a number of objections—as, the uncertainty in our diagnosis; the possibility of the continuation of the growth of the placenta even after the death of the fetus; and, finally, that the presence of this foreign growth is a standing menace to the health of the patient—all of which he claims are obviated by laparatomy.

But an agent that will enable us to dispel an abnormal condition which presents all the symptoms of extra-uterine pregnancy, such as the subjective signs reinforced by the presence of a tumor in the pelvis—a tumor that was growing as we would expect an ectopic gestation, which was accompanied by the discharge of a decidual membrane—such an agent, I say, should not be hastily cast aside. The growth of the placenta is, at least, entitled to the Scotch verdict of "not proven." Should the expected dangers result from the presence of the residuum of the ovum laparatomy may be performed.

Electricity has the advantage that it does not require a special amount of skill for its administration, hence can be practised where life would be sacrificed had we to depend upon the abdominal surgeon. Then, too, we that practise abdominal surgery are aware that cases will come to us that we are unable to impress sufficiently

with the gravity of their position, to induce them to undergo what they regard as a difficult and dangerous operation.

In those cases in which there has been a gradual rupture of the tube, and development of the embryo has taken place between the folds of the broad ligament, electricity seems to us the easiest way out of the difficulty. The agent is, however, of limited application. It is better fitted for the treatment of ectopic gestation of the first four months. After this period the danger to the individual would be enhanced by the indefinite retention of the dead embryo. Even after this period, however, in view of the frequently dangerous hemorrhage from the placental vessels, it seems to us that it would be good treatment to destroy life by electricity and await the coagulation of blood in the vessels, before proceeding to laparatomy.

Tubal pregnancy is regarded as presenting the gravest prognosis. This form rarely goes beyond the fourth or fifth month without rupture. Such an occurrence, aside from the effects of shock produced by the escape of the contents of the sac into the peritoneal cavity, is a source of danger through free and uncontrollable hemorrhage. In rupture the better plan of procedure is abdominal section, although Freund opposes operation, directing rather to wait and treat anemia and peritonitis. He quotes a large series of successful cases as justification of such advice. An analysis of his cases, however, shows that convalescence is of long duration. Laparatomy has been earnestly and ably advocated by Tait. This operation enables us to ligate the bleeding vessels and diminish the danger of peritonitis and septic conditions, by the removal of the blood and sac contents from the peritoneal cavity.

Tait and his school of abdominal surgeons advocate abdominal section when the existence of ectopic gestation is strongly suspected; but we would prefer, at any time before the fourth month, the application of the faradic current. After the fourth month we would still recommend the destruction of life by the electric current, and that abdominal section be postponed for some weeks, until obliteration of the placental vessels has had an opportunity to take place. By such a course we increase the probability of successful removal of the placenta and lessen the danger of hemorrhage. Where the fetus is living and viable, laparatomy should be done to save the lives of both individuals. The operation under such circumstances should

be done with the greatest care, so as to avoid separation of the placenta and the resulting hemorrhage.

This operation is denominated by Harris and other obstetrical writers, the primary operation. The results, according to the careful and painstaking researches of Harris, are exceedingly unfavorable. Of twenty-five cases operated upon in seventy-four years, but twenty-three recovered. He says this mortality can be lessened only in one of two ways:

1. By ligation of the vessels supplying the placenta and its removal with the cyst.

2. Treating the placenta antiseptically to prevent its decomposition.

Probably the best method of treating such cases is that of Martin, who makes a puncture from the most dependent portion of the sac into the vagina, through which the cord is passed and a drainage-tube inserted; the sac above is sewn up to close its cavity to the peritoneum.

To resume, we would recommend the following plan of procedure:

1. In every form of ectopic gestation prior to the fourth month, the destruction of the embryo by electricity (faradic current).

2. Between the fourth and sixth months, destruction of life by electricity and some weeks later laparatomy.

3. In rupture, immediate laparatomy with removal of sac, contents, and effused blood.

4. In cases that have passed the sixth month, wait until viability is well established and perform laparatomy; observe every precaution that separation of the placenta does not occur, close the sac above, and drain through the vagina.

5. In case of the death of the fetus it should be removed by laparatomy a few weeks later.

6. Where the fetus has become macerated and abscess has formed, its sinus should be enlarged and the fetal residuum removed.

IV. Observations—Clinical, Pathological, and Surgical.

By W. H. WATHEN, M.D.,
LOUISVILLE, KY.

It was not my purpose to say anything upon the learned papers just read by Drs. Townsend, Price, and Montgomery, for they will be discussed by other men of experience, but I beg you to bear with me a few minutes while I offer some suggestions—clinical, pathological, and surgical—on this interesting topic.

Mr. Lawson Tait has done more than anyone else to correct the false, but generally accepted, theories about the etiology and the pathology of ectopic pregnancy, and, with a few exceptions, I fully concur in his views. All ectopic pregnancies must begin in the Fallopian tubes, with the possible exception of ovarian pregnancy, and this cannot occur unless the ovule is held in the Graafian follicle after its rupture, and becomes impregnated there; but I do not believe that ovarian pregnancy has been positively demonstrated. An impregnated ovule cannot form villous and placental attachments unless it is held by the maternal structures nearly immovable in one place, hence the impossibility of fixation in the abdominal cavity, where the peritoneum and other structures are in nearly constant motion; and, were the ovule to fail to enter the tube, it would become dead matter and be absorbed by the peritoneum before fixation could occur. All abdominal pregnancies become such by secondary rupture, the cyst having primarily ruptured into the folds of the broad ligament before the end of the twelfth week of gestation. If the primary rupture is into the abdominal cavity, death is the usual result, unless the sac is removed by abdominal section; and if the woman does not die, the blood and the contents of the sac are absorbed by the peritoneum. In secondary ruptures, the conception cannot continue to develop in the peritoneal cavity if the villous or the placental attachments are entirely separated. But, if these attach-

ments to the tube, or to the folds of the broad ligament, are not separated, the conception may continue, and the placenta may extend its attachments to any structures which it is possible for it to reach —the uterus, intestines, omentum, bladder, etc. This briefly expresses the whole truth, and so simplifies matters that it is not logical to draw any other conclusion. I do not remember to have seen that any one has before called attention to the fact that fixation of an impregnated ovule cannot occur unless it be held in one place long enough for such attachments to form. An additional proof of this fact is observed in placenta previa, when the uterine walls fail to hold the impregnated ovule near the fundus of the uterus; it is finally caught and held in the mucous folds at or near the internal os uteri, and becomes fixed at the lower segment of the uterus.

I am in perfect accord with Mr. Tait in his views of the relation ectopic pregnancy sustains to extra-peritoneal or to intra-peritoneal hematocele. But I do not believe he is correct in saying that interstitial pregnancy always ruptures into the peritoneal cavity. "Maschka (*Wien. med. Wochenschrift*, 1885) has proved by a post-mortem examination that the cyst in interstitial pregnancy may rupture into the uterus. A woman, twenty-nine years old, died suddenly, and criminal abortion being suspected, a judicial autopsy was made and an interstitial pregnancy with rupture into the uterus was found. The body of the fetus had passed into the uterus and had been removed, but the head was torn from the body and remained in the sac."

In the *American Journal of Obstetrics*, 1887, page 536, Dr. Parkes, of Chicago, reports a case of ectopic pregnancy that he believed was interstitial, which was discharged from the sac into the uterus. I will briefly report a case that came under my immediate observation in the fall and winter of 1873, in which I feel sure an interstitial pregnancy ruptured into the uterus, and the woman recovered. Mr. Tait may object to the introduction of this case because the woman got well and no post-mortem could be held to verify the correctness of the diagnosis; but an assumption that no case of ectopic pregnancy in which we are unable to avail ourselves of the objective facts as seen in an autopsy, or in an abdominal section, can be relied upon, is not logical, for in careful physical examinations we may learn facts of great value in solving problems otherwise not understood.

I was called in the late fall of 1873 to see Mrs. C., an Irish woman, aged twenty-seven; she had not menstruated for three months, and had all the subjective symptoms of pregnancy. With the exception of some sharp pains in the right inguinal region low down, and pains in the lower part of the back, she had no untoward symptoms until the day before I saw her. She then began to suffer severe pains in the right iliac region and had considerable uterine hemorrhage. She became partly unconscious for a while; as pain and bleeding continued, I suspected that she was threatened with abortion,and kept her in bed under the influence of an opiate. She continued to bleed and suffered enough pain to require the occasional use of the opiate. In a careful physical examination I found the uterus enlarged, but a greater enlargement was observed toward the right ovarian region, connected with the uterus. She had but little fever, but continued to suffer and lose blood. As she did not improve, and had no one to care for her properly at home, I sent her to St. Joseph's Infirmary, where I saw her frequently during her illness. The enlargement in the right ovarian region did not appear to increase, but at the end of the fourth month the uterus began to enlarge rapidly, and in another month it was as large as the gravid uterus at term. About this time she again suffered severe pains, when more than a quart of clotted blood was expelled, which caused a marked decrease in the size of the uterus and abdomen. In a few days the enlargement returned, and another hemorrhage was followed by a corresponding decrease in size of the uterus and abdomen. This occurred nearly every week for several weeks. Finally, I was called in haste and found her suffering severe uterine contractions with a large mass protruding from the uterus into the vagina. In a little while, more than a gallon of hydatiform growths was expelled and the uterus contracted to less than its usual size after labor, but there remained an enlargement connected with its right cornua in the site of the original tumor. The next day local peritonitis developed in this region and increased the size of the tumor until it was as large as a goose's egg. Her pulse grew rapid and her temperature was 103° to 104° for a week. She then began to improve and was able to leave the Infirmary in two months, but the tumor did not entirely disappear for many months afterward.

The late Professor John E. Crowe was associated with me in the

case, and we fully concurred in the diagnosis, but neither of us came to any positive conclusion until after the expulsion of the hydatiform growths. She narrowly escaped with her life from the peritonitis, and we did not think for several days that she would recover. She became pregnant two years afterward and gave birth to twins, and three years later gave birth to another child. I examined her carefully a few days ago and could detect nothing abnormal in the pelvis except a completely retroverted uterus, and decided tenderness when I pressed in the region of the right ovary and tube.

The hydatiform growths prove that this woman was pregnant; and if it were in the uterus then, Why the primary and secondary enlargement to the right of the uterus and the localized peritonitis? How can we explain all the symptoms? Her uterus is now normal in shape internally and externally.

I must adhere to the generally accepted belief that the spermatozoa come in contact with the ovule in the outer part of the tube, or probably before it enters the tube, and that the fructified ovule passes slowly through the tube to the uterine cavity. All the facts that we know in relation to generation favor this view, and I know of no logical argument against it. Mr. Tait's *belief* that the spermatozoa cannot pass out through the Fallopian tubes unless disease has destroyed the ciliated epithelium, is based upon no tangible evidence, and is contrary to all that is known upon this subject. It is positively known that the spermatozoa pass out through the tubes upon the ovaries and into the abdominal cavity in the lower animals. While these tubes are not identical in shape, etc., with the Fallopian tubes of the woman, they serve the same purpose and are lined with ciliated epithelium, which sustains the same relations to the movements of the spermatozoa that exist in the Fallopian tubes of the woman. It is doubtless true that desquamative salpingitis is a frequent cause of ectopic pregnancy, but it is because of the obstruction offered to the passage of the impregnated ovule. This character of tubal disease would not facilitate but would obstruct the passage of the spermatozoa, just as it does the impregnated ovule.

It is a well-known fact that the spermatozoa move by an inherent force at a rate variously estimated. Henle concludes that they move one inch in seven and a half minutes, and Sims that they move their length in one second. Nor are their movements easily

interfered with, for Robin has observed that they push out of their way epithelial cells or crystals ten times their size; so why should they not overcome any *possible* obstruction caused by the cilia of the tubes? The impregnated ovule passes slowly through the tubes—in the bitch it does not reach the uterus for eight or nine days, and in the guinea-pig for three or four days. Playfair and other distinguished authorities claim that in the human female the ovum has never been found in the uterine cavity before the tenth day after impregnation. The uterine mucous membrane becomes succulent and thickened during the passage of the fecundated ovule through the tube, so as to prepare a proper nidus upon which it may rest and from which it may be nourished. If this did not occur in woman, the ovule would often fail to become attached at the upper segment of the uterus and would pass down to the internal os, or out of the uterine cavity. The inherent power of the spermatozoa to reach the ovule is made manifest in those cases where women have become pregnant with an almost imperforate hymen, or with atresia vaginæ so nearly complete that there was only a very small fistulous tract leading to the uterus; or in that very remarkable instance where the spermatozoa reached the uterus through the bladder, having to pass through the urine.

Koeberle reports a case "where the uterus had been amputated two years before for fibroid tumor, but a fistula was present in the cicatrix of the cervix through which spermatozoa passed into the abdominal cavity, and pregnancy resulted." The tube may be entirely closed and the ovule may become impregnated by spermatozoa from the other tube. "Leopold tied the right Fallopian tube in rabbits in two places and exsected a portion of the tube between the ligatures; the left ovary was carefully removed and the abdominal wound was closed. After recovery the rabbits were put to the male. In two such cases pregnancy followed." (*Arch. f. Gynäk.*, vol. xvi. page 24.)

The ovule is short-lived, and if not vivified in the tube by contact with the male element degenerative changes will destroy its vitality before it reaches the uterus. Charpentier and other recognized observers claim that after it passes the outer third of the tube, it is covered by a layer of albumen which the spermatozoa cannot pierce. Many other facts could be given to prove that impregnation does not occur in the uterus.

I wish to inveigh earnestly against electricity, or any other means used to destroy the life of an ectopic gestation, for I believe such treatment harmful, if we have made a correct diagnosis, which is nearly impossible until after the rupture of the sac. I put little confidence in the reported successes by the use of electricity, for I am convinced that in nearly every instance there was an error in diagnosis, and that the women were not pregnant.

Abdominal section and the removal of the fetus and sac is the correct treatment, and the experience of Mr. Tait has proven that it is the most successful method of treatment.

In conclusion, I wish to impress upon the Fellows the fact that it has not been my purpose to criticise Mr. Tait; his work in ectopic gestation, if he had done nothing else, would entitle him to the lasting praise of not only the members of the medical profession, but of every enlightened man and woman. His kind heart has probably caused him sometimes to do things that he afterward had cause to regret, and to accept conclusions of some one in whose judgment and powers of observation he had too much confidence. I will mention two instances. He accepts as a demonstrative *truth* that "desquamative salpingitis could at once put the mucous lining of the tube into a condition exactly similar to that of the uterus." This is a physical impossibility, for these membranes are so dissimilar anatomically and histologically that they can no more be made identical in structure, than can the skin and the mucous membrane of the stomach. This I assert without fear of contradiction, and the investigations of men learned in anatomy, histology, pathology, and microscopy will positively demonstrate its truth. It must be remembered that there are but few observers whose statements upon such subjects as this can be accepted without reservation. The similarity could go but little, if any, further than in the total destruction of the ciliated epithelium lining the tube and the endometrium. He again accepts as a fact the discovery by one of his assistants, "Of a large nerve-trunk entering or leaving the cornua of the uterus at the angle between the round ligament and the tube." The gentleman who claims to have made this discovery was doubtless honest in his belief, but his powers of observation were defective, and he probably mistook something else for *a large nerve*. It is no longer a disputed fact that the uterus in all its parts is well supplied with nerves, and that the

tubes, ovaries, and upper part of the uterus are in part supplied from the spermatic plexus, which is probably derived from the renal plexus and the upper aortic plexus; but there is no nerve of any magnitude that has not previously been discovered, by some one of the many well-trained and learned observers who have so patiently and carefully worked in this field. If we will examine the illustration of Frankenhaeuser, 1867, showing the ganglionic and nerve supply and distribution to the uterus, we will see how neatly he traces a *nerve-trunk* formed by the uterine and ovarian nerves, to the cornua of the uterus at the angle between the round ligament and the tube. The nerves of the uterus and ovaries are also made conspicuous in the illustration of De Graaf, 1678.

V. A Critique of its Management.

By J. M. BALDY, M.D.,
PHILADELPHIA, PA.

I am glad to take the floor and discuss this exceedingly interesting and important subject of extra-uterine pregnancy, because it will enable me to express views that I have not heard advocated here as yet. My remarks will be confined to that variety of the disease which is known as tubal pregnancy, and in this connection I shall only dwell on two points, viz., diagnosis and treatment. As to the pathology of this disease, some of what has been said I can accept, but much of it I cannot endorse. I accept almost *in toto* the teachings of Mr. Tait on this subject.

The diagnosis I consider beyond the reach of man, and never expect to see the time when it can be made with certainty and accuracy. One may see a patient suffering with all the symptoms that have been put down as diagnostic of the disease, and yet it may turn out to be something else. Such a case has passed under my own observation. The woman had missed her menses for one or two periods; her breasts were swollen, contained milk, and presented the other characteristic symptoms; her abdomen was slightly swollen, and she had vomited a number of times; she had vesical irritation and constipation; characteristic colicky pains were present and she had passed "something" from the vagina, which, from her description, was considered decidual membrane. Vaginal examination revealed a mass about the size of a small orange to the right of the cervix uteri. An operation two days later disclosed an ovarian cyst.

It may be contended that such a mistake is not likely to occur in careful hands. Surely no one would pretend that Dr. Mann, of Buffalo, could not make the diagnosis, if it could be made at all; and yet Dr. Mann did diagnosticate a case as one of extra-uterine pregnancy and suppositively destroyed the fetus by electricity. That same case, a short while afterward, fell into the hands of Dr.

Wylie, of New York, who operated and found a large purulent sac, containing a pint or more of fluid, but nowhere any trace of an extra-uterine pregnancy ever having been present. I think the advocates of the electrical treatment are not exactly honest in not reporting such cases, and I have no doubt that there are plenty like this one. Certainly there have been and will be plenty like mine.

There are only two methods of treatment worthy of any consideration, viz., that by electricity, and that by abdominal section. After rupture has taken place all are agreed that abdominal section is the only thing to be done.

Before rupture has taken place most of our American surgeons, I am sorry to say, advocate the treatment by electricity. Electricity will, beyond doubt, kill the fetus and thus save the patient from all the worry and excitement of a surgical operation. However, after the fetus is dead a diseased mass is left behind. Lusk has reported two cases in which the mass was still present for four and six years afterward, and there are others on record. Now this mass is just as likely to take on active inflammatory action as any other pelvic mass, and a woman with such a disease remaining is very liable to have later trouble, and eventually come to the knife. I consider it the height of folly to operate on inflammatory disease of the appendages and leave such a condition as this. These sacs have been known to ulcerate their way out, and quite a number of such cases are on record. Again, after the operation a vessel has been known to burst and the patient thereby lost. Mann says these accidents have happened so seldom that they need not be taken into consideration. But what sane man would not take accidents into consideration when they have occurred in two or three per cent. of all the cases reported? This matter is too serious to be thrown aside in that manner. Electricity leaves the woman in as much a mutilated condition as if the tube had been removed. This is not all the objection to this treatment, for we have some immediate dangers we must contend with. Dr. Janvrin lost a case, a few hours after having killed the fetus, from a rupture of a vessel in the cyst wall. I have seen electricity passed through a cyst not extra-uterine and the patient became worse after each application.

With all these objections arrayed against electricity we find nothing against the knife, excepting that it is a surgical operation. No case

of death has ever been reported as due to the knife. If a mistake in diagnosis has been made no harm has been done, as the disease, whatever it is, will require the knife at any rate. The operation is no harder than the removal of pus-tubes or inflamed tubes, and the statement which has been made that we have no Martins or Taits in this country is a gross insult to American surgeons; there are probably twenty men here present who are competent to deal surgically with an extra-uterine pregnancy.

I can only end by stating, as I have before done, that I consider that while playing with electricity in this disease, we are running much the same risk that the proverbial child did when it played with fire.

VI. The Technique of the Operation.

By JOHN B. DEAVER, M.D.,
PHILADELPHIA.

Before a body of distinguished gynecologists a general surgeon might feel out of place in discussing a subject which has been heretofore considered foreign to his mission; but as extra-uterine pregnancy calls for the treatment of a foreign body within the abdomen, and, especially when the sac has ruptured, for the treatment of hemorrhage within the abdominal cavity, I feel that every surgeon should be alive to his sense of responsibility, and to the demands made on him by his patients who may require his services for the treatment of this unfortunate condition; or, perhaps, by his fellow practitioner who may call on him for assistance. Therefore, he should be prepared to do the necessary operation with dispatch, and meet with the many complications that so often arise in abdominal and pelvic surgery.

In considering the technique of the operation let me speak, *first*, of the length of the incision that should be made and the size of the same. The linea alba offers the best point through which to make our incision, it giving us like command of either side of the interior of the pelvis. Here the abdominal walls are thinnest and fewer bloodvessels call for division, than if we selected a point elsewhere than through either semilunar line. The length of the incision should not be greater than is necessary for the introduction of the index and middle fingers of the more educated of the two hands, and for the easy manipulation of them when inserted into the pelvis. Through an incision of this size, in the event that we are dealing with hemorrhage, we are able to remove the blood-clots and find our way to the uterine appendage, the seat of the trouble, and determine the further manipulation necessary to inspect it. By such an incision there is less exposure of the contents of the abdomen and less likelihood of the escape of the intestines and great omentum—a

very important precaution, I consider, to be observed. Through an incision of this size we are able to bring the diseased tube to the bottom of the wound and, if necessary, to inspect it. Again, it gives us ample room through which to irrigate, an equally important point to be observed in nearly all abdominal and pelvic operations. If we are dealing with an extra-uterine pregnancy of some months' standing, and the original incision is too small, it is a very simple matter to enlarge it and thereby give us as much room as had the incision been originally a long one.

Second, having reached the interior of the pelvis and found our way to the site of the trouble, in the event that it is a ruptured sac with which we have to deal, it is important to deliver it and tie it off as soon as possible, thereby lessening the amount of shock which would result from prolonged manipulation. When there are few, if any, adhesions, it is a simple procedure, the difficulties of the operation, therefore, being increased in proportion to the number, the position, and the strength of the adhesions met with. In dealing with an adherent mass, we should first survey the interior of the pelvis at the point where the enucleation is to be made, bearing in mind the position the small intestine and the sigmoid flexure of the colon hold to it, also the ureters and the bloodvessels of the pelvis.

To gain access to the cavity of the pelvis, after the abdominal walls have been divided, it may be necessary either to dissect up the great omentum, which is sometimes found adherent to the fundus of the uterus, or to break through it; in which event, after the enucleation is completed, the abdominal cavity thoroughly irrigated and the drainage-tube introduced, any remaining rent in the great omentum should be brought and maintained in apposition by a continuous catgut suture, the object being to prevent any likelihood of an acute strangulation of the small intestine, from a nuckle of the same becoming engaged therein. Having reached the fundus of the uterus the fingers are to be passed down to the floor of the pelvis behind the mass, their dorsal surfaces looking into the hollow of the sacrum. In performing the enucleation the points of the fingers are to be kept close to the mass, when its connections with the surrounding parts are to be severed in the direction of from below upward, and at the farthest point from the important surrounding structures. The small vessels supplying these adhesions will bleed

but little owing to the character of the manipulation by which they have been separated. By dealing with the mass first from below, and severing its connections there, we are able to lift it up, bringing it to the bottom of the womb, it resting upon the palmar surface of the fingers, and in the event of there being strong intestinal adhesions we are additionally guided in their separation by being able to see them by their having been made more accessible, when, if necessary, they can be surrounded by two ligatures and severed.

When we meet with an adherent vermiform appendix, unless the patient's condition is very bad and contraindicates undue or prolonged manipulation, I think it well to tie off and cut away the appendix, it being, as we know, a useless organ and one capable of serious trouble. Were we so unfortunate as to tear either iliac vein it should be tied both above and below the opening made in it, this being much safer than to attempt to ligate it laterally. Should we have a portion of gangrenous bowel to deal with, resection or the formation of a temporary artificial anus, which can subsequently be closed, would be the treatment. In the event of tearing the ureter and having discovered it, the proximal end of the ureter could be stitched in the abdominal wound, making a urinary fistula; but a safer procedure would be to do a median nephrectomy. If the condition of a portion of the great omentum is questionable, I unhesitatingly state that, in my experience, it is far better to ligate it and remove the doubtful portion than to return it with the hope that it may recover itself; this I have had demonstrated in operations for strangulated hernia.

Third, irrigation. In all cases of abdominal section for intra-abdominal hemorrhage, where there has been escape of the contents of a cyst into the abdomen and where adhesions have been separated, the abdomen should always be most thoroughly washed out. In fact, in all cases of section where the indications do not seem to call for irrigation, yet if there is any doubt in the mind of the operator as to whether or not he should wash out the cavity, I should say that it was safer to err upon the side of safety and irrigate. This, irrespective of the removal of all foreign matter and leaving the parts in a perfectly aseptic condition, in depressed conditions acts as a stimulant by exciting the sympathetic nerves, with which it is brought into close contact, by being introduced into the abdominal cavity, where the greatest number of

branches of this system of nerves are distributed; while in cases where there has been much leakage from the skin, an evidence of profound shock, it acts in a two-fold manner by filling up the depleted bloodvessels and by stimulation.

The *rationale* of the use of hot distilled water in the abdominal cavity to my mind is so logical, that I use it extensively in other than abdominal sections, particularly after the operation for the relief of a strangulated hernia, where there is always much depression; here I always open the sac, thereby giving me access to the cavity. In cases where I have had to make a large incision in the abdominal walls, I flush the cavity by pouring the water into it directly from the basin; this I have done after the operation of ovariotomy complicating a six months pregnancy, without provoking abortion, where I had to deal with a multilocular cyst filled with colloid matter, and where the adhesions were universal and the wall of the cyst so friable as to prevent its giving away.

Fourth, drainage. In all cases of section for hemorrhage or where much bleeding has occurred while doing the section, where there has been escape of pus or other septic matter into the peritoneal cavity, there should be no hesitation about the case being a proper one for drainage. In fact, my experience has been that cases where a drainage-tube has been inserted have proved less complicated after the operation, than in cases where it has not been used.

VII. Its Management when the Fetus Survives Tubal Rupture and goes on to the Period of Viability.

By L. S. McMURTRY, M.D.,
DANVILLE, KY.

The subject of ectopic gestation deserves very careful discussion on account of its interest and importance, and from the fact that recent advances in pelvic surgery have recast the pathology of this condition and remodelled its treatment. I accept unequivocally the teachings of Lawson Tait upon this subject, since they throw light where all was darkness, and bring order out of confusion and conjecture. The essential points in the pathology have been concisely stated by Dr. J. Price, and are confirmed by the rapidly accumulating data of pathologists and operating surgeons.

The important points are these: *First.* All cases of ectopic pregnancy are in the beginning tubal. *Second.* When rupture occurs, the ovum may pass into the intra-ligamentous cellular space or into the peritoneal cavity—the intra-peritoneal being a deadly accident, and the intra-ligamentous favoring the growth and development of the fetus. As to diagnosis, I believe it altogether impracticable before the period of rupture. I am sceptical in regard to all claims of diagnosis previous to that time. Indeed, if I were to witness the confirmation of such a so-called diagnosis I would consider it only a happy guess. This insurmountable difficulty in diagnosis—a difficulty enhanced by the fact that the patient rarely requires or seeks aid from the physician previous to rupture of the tube—must necessarily impair confidence in the results claimed for treatment by electricity in the early weeks of ectopic pregnancy. When the diagnosis is made, which will, as a rule, be at the time of rupture, abdominal section, removal of fetal tissues, and cleansing away extravasated blood, constitute the only treatment worthy of confidence. This procedure is thoroughly surgical, and if done promptly and skilfully the result is satisfactory in every respect.

But, Mr. President, I desire to address my remarks in this discussion, more particularly, to the management of extra-uterine pregnancy when the fetus survives tubal rupture and goes on to the period of viability. Six months ago I operated in a case in which the child had perished after the period of false labor. This occurred one month before I saw the patient. The operation was necessitated by the appearance of septic symptoms. On opening the abdomen I found the child loose, without a trace of the sac. The liquor amnii had been absorbed and the child was undergoing decomposition. The placenta formed a large mass attached to the uterus, bowel, and floor of the pelvis. The cord was shrivelled, and in examining the placenta I started a hemorrhage which compelled me quickly to remove that mass. By sponge-packing and forceps-pressure I arrested the hemorrhage, put in a drainage-tube, and closed the abdomen. My patient never fully reacted and died the following day. The cord was shrivelled and the placenta gave no evidence of active circulation.

Just how to deal with the placenta is the great problem in these cases. The popular plan seems to be to stitch the sac to the edges of the incision, to leave the placenta untouched, and to place a drainage-tube at the site of the placenta with the cord hanging from the lower angle of the wound. During the long process of suppuration and discharge of placental débris the patient is exposed to the perils of sepsis. In such a case, in the hands of one of our Fellows, death occurred from hemorrhage during separation of the placenta two weeks after the operation. Thornton has reported a successful case in which he removed the entire gestation sac. Martin had a successful case at full term with living child, in which he removed the placenta. Some operators have endeavored to quilt around the placenta with the cobbler's stitch and thereby arrest hemorrhage; others have tried to tie the vessels feeding the placenta. Unfortunately, there is no way to ascertain beforehand that the placental circulation has ceased. Schroeder found in one case obliteration of the vessels three weeks after death of the fetus, while Depaul lost his patient from placental hemorrhage four months after the death of the fetus. The truth is, that no hard and fast rules can be laid down for deciding the management of these cases, since no two cases are alike. After my own experience I would prefer to leave the placenta untouched, unless its arrangement is such that it can

be securely clamped or tied away. Mr. Tait suggests that the sac be thoroughly cleansed after removing the fetus, and, while filled with water, to stitch the incision in the sac so as to close it tightly as the water is removed, thereby closing it hermetically; then to close the abdomen and leave the sac and placenta to atrophy and absorption.

One other point of great importance presses for consideration. When a case of ectopic gestation has advanced near or quite to full term shall we await the death of the child and the approach of sepsis before operating; or shall we, at the advent of spurious labor, open the abdomen and attempt to save both mother and child? Harris has collected thirty cases operated upon after the period of viability, with the result of only five women and twenty-two children saved, a number of the children dying within short periods after birth. It must be remembered that nearly all of these cases occurred before the days of modern abdominal surgery, and hence cannot properly be either a guide or a hindrance to future action. Mr. Tait has performed three operations at this period, with the splendid result of "one death of a mother and no deaths of the children." Several successful operations have likewise been done in our own country, and it is quite safe to predict that they will become more numerous.

VIII. Remarks by Dr. Henry T. Byford,

CHICAGO, ILL.

I think the term extra-uterine pregnancy is fast losing the horrors formerly connected with it. I am sorry to say that those who have done the most to render the severe forms amenable to treatment are doing a great deal to keep up this feeling of horror or dread. Quite a proportion of the cases of hematoma that recover are undoubtedly from extra-uterine pregnancy. When a case of hematoma does occur, and goes on to recovery, there is no doubt that it is very difficult for the ordinary practitioner to know whether it is one or not. I remember a case of supposed pregnancy turned over to me by a friend because he thought she was aborting. She presented symptoms of extra-uterine pregnancy, had a hematoma of the right broad ligament, and in a few days passed a complete decidua. I watched that tumor disappear completely, and the patient, whom I have watched for about three years, has had no trouble attributable to it. I think quite a proportion of cases get well in that way where operation is not necessary.

To say that we cannot diagnosticate these cases is, I think, somewhat of an insult to American gynecologists.

As to the statement that no case has died from the operation, that is a sweeping statement and may possibly be true; but that such a thing will go on long I do not think is tenable. I think that during the first two months, when we can diagnosticate a case, it is safe—in view of the fact that so many get well with ordinary symptoms of hematoma—to destroy the fetus and leave the case to absorption.

IX. Its Treatment (*concluded*).

By A. VANDER VEER, M.D.,
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Many eminent writers and operators in the field of abdominal surgery have paid especial tribute to the worth of Sir Spencer Wells's monograph on abdominal tumors, published in 1865. The particular excellence of this work lies in the full, clear history of cases, the concise yet minute description of the surgical devices employed in overcoming obstacles and bringing his cases to a successful termination.

Much of the literature upon ectopic gestation, especially that which deals with the subject before rupture and hemorrhage, as to histories, points of diagnosis, and the details of treatment, is very vague. The busy writer is often prone to pass rapidly over the history, symptoms, and general manner of treatment, to enter some special pleading for this or that form of treatment.

The abdominal surgeon will often be called in consultation by the general practitioner when a suspicion of ectopic gestation may arise. It will be necessary for him to have in mind the various points of diagnosis, especially of early diagnosis—that is, sometime prior to the sixteenth week.

I believe there are, on the one hand, a class of cases in which a diagnosis can be made before rupture and by the tenth week. On the other hand, there are cases which do not give rise to any symptoms other than those of a normal pregnancy before the rupture takes place; witness the thirty-five cases of Tait, the eighteen cases found post-mortem within a very short period by Dr. H. F. Formad, of Philadelphia, and numerous other cases in literature, as well as many, I dare say, buried without a diagnosis having been made. In Formad's cases no examinations had been made; the pain and collapse had been attributed to colic or cramps. The deaths all occurred in laboring women and before the twelfth week.

The first class of cases are such patients as have been under the eye of the gynecologist perhaps for years, and have been treated for some form or other of pelvic disease. He will therefore be conversant with the pelvic conditions and relations, the presence or absence of new growths, the condition of the periuterine connective tissue, the broad ligaments, the tubes and ovaries, as well as the position of the uterus. In such cases there will be the onset of menstrual disorders altogether new or different from those heretofore experienced; severe and recurrent attacks of pelvic pain; mammary and gastric disturbances; perhaps the expulsion of shreds of membrane with the clots; dysuria—any or all of these symptoms may bring the patient to him. When to these symptoms, upon examination, the vaginal hue (the so-called wine cast), which I believe to be valuable in a goodly per cent. of cases as early as the second month (Chadwick), is present, the uterus displaced either laterally or forward, the cervix softer, the os more patulous, the uterus enlarged, and finally a new growth, behind or to the side of the uterus, globular, semi-fluctuant to the touch—a strong presumption of ectopic gestation exists. If, after another examination, the pelvic conditions are aggravated by the rapid increase of the tumor, or, as in many cases, fresh decidual shreds are expelled, it seems to me that we are quite as sure of our diagnosis as when we have decided an abdominal tumor to be ovarian.

The literature of ectopic gestation is not without a goodly number of histories with symptoms subjective and objective as clearly defined as already mentioned. We have made our diagnosis. How and when shall we treat our cases?

For convenience' sake the treatment may be relatively divided into three classes: *First*, cases diagnosticated before the fourth month; *second*, cases between the fourth month and term; *third*, cases after term and spurious labor.

Among obstetrical and gynecological writers there is no great difference of opinion relative to the manner of treatment of the second and third classes, and even some of the first class of cases. As I understand it, the general consensus of opinion of those who advocate the use of electricity is that it is not applicable after the fourth month, or after rupture and hemorrhage *whenever* they occur. Aside from abdominal section and electricity, no method of treatment has any considerable number of advocates.

The use of electricity as a feticidal agent is largely an American method of treatment. Aveling claims the first successful case in England, in the *British Gynecological Journal* for May, 1888. It has gained no considerable foothold in England and has no advocates on the continent. In America there have been reported forty cases with one death, and that from hemorrhage following an application. In nearly all of the cases, from reading the histories, there can be little doubt of the diagnosis. The treatment was instituted at periods varying from the end of the second month to the end of the fifth. One case in which the fetus was afterward discharged by ulceration into the vagina (Chadwick's) was approximately at the one hundred and fifty-third day of gestation. The advocates of electricity are very generally agreed that treatment by electricity should not be instituted after the fourth month. The galvanic and faradic currents have both been used with equally good results. However, the majority, I think, prefer the faradic current. Apostoli, one year ago, recommended the use of galvano-puncture. In reply to a question asked, he said that he had no personal experience with it. Galvano-puncture of the sac has been an unusually fatal procedure. I know of but one successful case.

Objections have been urged against electricity as a feticidal agent —that it is an immediately dangerous operation, that the diagnosis has not always been established beyond reasonable doubt, that the placenta continues to grow after the death of the fetus, that the method often fails, and that the after-histories of many of the cases have been serious ones. It seems to me that there are not enough data yet collected either to refute or confirm these objections. However, it seems to have been followed by no immediately serious results save in one case. The objection that the diagnosis has not always been clear doubtless has considerable weight in a few of the cases, yet the question may be seriously asked, With the present mortality following exploratory incisions in America, are we justified in doing laparatomy in similar cases? In none of the cases yet treated by electricity has the placenta been shown to have grown after the death of the fetus. I think the placenta of an ectopic gestation does not resemble in size, weight, or outline that of a normal one—Thomas's case, for example. That the method fails has been demonstrated by Price and others. The objection that untoward results follow the operation seems to have a better ground than

many others. Surely many of the cases treated by electricity have not been followed by absorption of the ovulum or product. One case already cited was followed by septicemia with the discharge of the contents of the sac through the vagina. (Chadwick's case, afterward treated by Dr. Murphy, of Washington.) The convalescence in this case was tedious. There are several cases in which, after months, considerable thickening of the broad ligaments remained, and in a few the fetal sac did not materially decrease in size (*e. g.*, Reeve's case). Manifestly, an unabsorbed product of ectopic gestation is not a desirable mass to have located in the pelvis, by its presence producing uterine displacements with all of their attending symptoms, or being a seat of chronic irritation ready at any moment, under favoring circumstances, to be lighted up into an active inflammation. Again, a tube once the seat of an ectopic gestation can never afterward be of any functional use.

The operation for the removal of the product of an ectopic gestation by abdominal section before rupture has taken place, or before the expiration of the fourth month, ought not to be more serious than the removal of the tubes and ovaries. Veit records seven successful cases with no failures. If the operation can be done without increased danger to the mother, it should be done, and that, too, at the earliest possible date after the diagnosis has been made. It is to the surgeon an ideal method. There remains no foreign body to be disposed of and no serious after-effects to be feared. This method, I am sure, is receiving no little attention in this country, and is the recognized procedure in Germany. Dr. A. Martin, after commenting on the after-histories of cases treated by electricity "as running on a slow course," said we have agreed (*Proc. Brit. Gynec. Soc.*, 1886) to operate at once in our tubal cases. Waiting in any case for rupture is dangerous. Twenty-five per cent. of the cases after rupture die before an operation can be done. It is to be hoped that sufficient experience will soon be collected to show the relative value of electricity and abdominal section, in the treatment of early ectopic gestation.

When in a case there arise the symptoms of shock, and internal hemorrhage occurring, as shown in the case reported by Dr. Henry Hun, in the *Amer. Journ. of the Med. Sciences*, July, 1884 (and a few reprints I here present, as the paper is a very complete one in many respects), then it will be seen the achievements of Mr. Tait clearly

point out to us our duty. He has done more than all others to give to the world a great life-saving operation. There can be no doubt that an immediate abdominal section is the only proper thing to do; ligating the broad ligaments, removing the tube with the product of conception, and cleansing the abdominal cavity. If a case of ectopic gestation goes safely beyond the fourth month the dangers of rupture become very small. The general tendency of operators is to leave the cases alone until the onset of spurious labor, if the fetus be living. Then comes the question of whether we shall try to remove a living child, or wait until after the child is dead and the placental circulation has ceased. The first method has been most disastrous in the past as regards the safety of the mother. Harris collected twenty-five cases, with twenty-three deaths. However, the same author has examined ten cases occurring since 1881, in which the operation was done after the fetus became viable. There were four recoveries and six deaths. Five children lived, or their deaths were attributable to natural causes. Mr. Tait reports seven cases with six recoveries. The tendency of operators is growing more and more toward primary laparatomy even at the increased risk of mothers.

After spurious labor and the death of the fetus, the onset of suppuration makes abdominal section imperative. If the fetus is quiescent, operation, although advisable, is not urgent (Greig Smith). It is better to wait until absorption of the amnion indicates that the placental circulation has ceased.

The following cases coming under my observation I report briefly:

Mrs. V., the wife of one of our most prominent physicians, became pregnant a few years after marriage. In time it was recognized as a tubal pregnancy. She suffered nearly twenty years previous to her death with constantly recurring pelvic abscesses, discharging through vagina and rectum, and accompanied with portions of the fetus. No operation attempted.

Mrs. B., young, happily married, and with the brightest prospects in life. She became pregnant; suffered much. I am not sure whether a diagnosis of extra-uterine pregnancy was made, but after spurious labor and when septic symptoms presented, I was consulted; but another surgeon was called to perform abdominal section for reasons I cannot now explain. The sac was found, a suppurating

fetus removed, the cavity washed and drained, but the patient lived only a few hours.

Mrs. B. married in 1871 and became pregnant in 1874. At the time of each monthly period afterward she had a thin, pinkish discharge from the vagina. In November, 1874, she had severe abdominal pains and a watery discharge from the uterus. A physician was called who declared her to be in the seventh month of pregnancy. She was ill for some time after this and confined to her bed for five or six months. Slowly regained her usual health and the natural monthly flow returned, but she did not change much if any in her size or form. In 1877 she became pregnant, and at the seventh month was delivered of a dead child. In July, 1879, after severe effort, she felt something give way in her abdomen which was followed by a slimy discharge from the rectum for three days, and then by profuse yellow pus. Periodic discharges of this nature continued up to February, 1881. Dr. Newcombe states that he made an examination, and then discovered fetal bones protruding into the rectum about three inches above the external sphincter. Several attempts were made by him during a period of two weeks, when he finally succeeded in reaching the mouth of the sac, enlarged its opening and, with the aid of forceps, removed the fetal bones, which are here presented. The smaller bones were scooped out. Some two or three pieces were embedded in the wall of the sac, but were dislodged by scraping. On the sixth day afterward the sac filled, but opened on the 13th of March, when, by careful washing, the patient was kept in good condition and finally went on to recovery.

When we consider these cases as a class carefully, and think of their intense sufferings, anxiety of friends, and their small hope of ultimate recovery, it seems to me we are justified in urging, when the diagnosis is clear, primary laparatomy, especially in view of our improved technique in doing the operation.

Finally, allow me to record my belief that in primary laparotomy the placenta ought to be removed either by ligation or by exsection, as in Prof. Aug. Breisky's case. In the four recent successful cases collated by Harris the placenta was removed in three. Tait, who has been so signally successful, removed the placenta.

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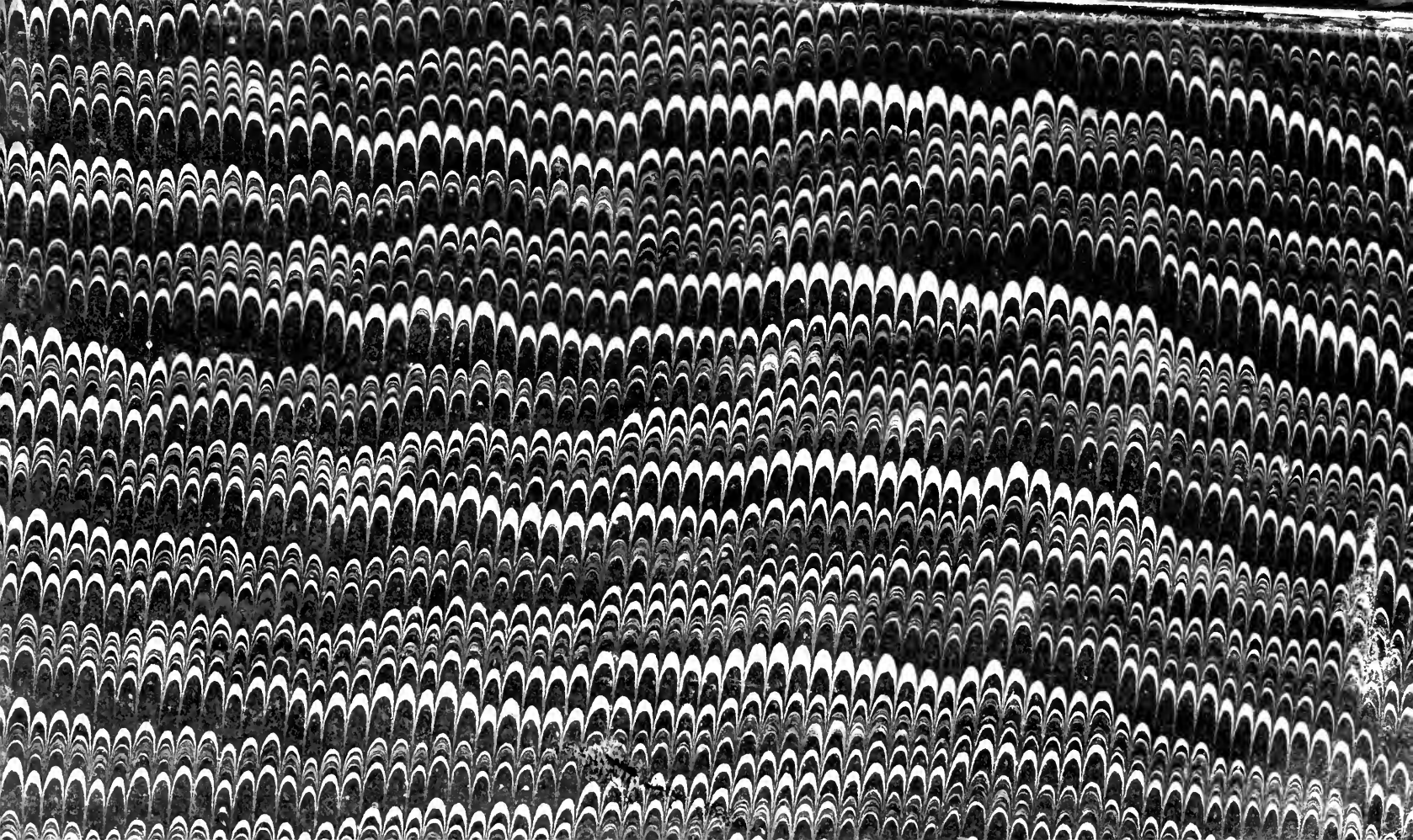

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